VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a minor, municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the operation of a sewage treatment plant from a mobile home park. This permit action consists of updating the permit to reflect changes in the Water Quality Standards, the permitting boilerplate, tightening the ammonia limitation, and correction of owner name. SIC Code: 4952.

1. **Facility Name:** Red Hill Utility Company LLC
   Address and Location: 3812 Puddledock Road
   Prince George, VA 23875

2. **Permit Number** VA0028258
   Existing Permit Expiration Date: April 1, 2009

3. **Owner Contact**
   Name: Mr. C. Ray Beard
   Title: Trustee for Estate of W.P. Beard
   2073 Cypress Drive
   Charlottesville, VA 22911
   Telephone No: (434) 973-7200

4. **Application Complete Date:** TBD Waiting for confirmation from OFA

   Permit Drafted By: Jaime Bauer, Piedmont Regional Office

   Reviewed By: Denise Mosca **Date:** February 5, 2009

   Reviewed By: Gina Kelly **Date:** February 19, 2009

   Reviewed By: Curt Linderman **Date:**

   Public Notice: Name of Newspaper:
   Date of 1st Publication:
   Date of 2nd Publication:

   Public Comment Period: Start Date:
   End Date: 4 pm on

5. **SCC Certification Verification as required by Section 62.1-44.15:3 of the State Water Control Law:** Applies to privately owned treatment works serving or designed to serve 50 or more residences (9VAC 25-31-100.E.2.) The Red Hill Utility Company serves 300 residents and is subject to this requirement.

6. **Financial Assurance/Closure as required by 9 VAC 25-650-10:** Applies to privately owned treatment works with design flows less 40,000 gallon per day. The Office of Financial Assurance has confirmed receipt of current financial assurance documentation for Red Hill Utility Company LLC.

7. **Receiving Stream Name:** Harrison Branch
   Basin: Appomattox River Basin
   Section: 5b
   Class: III
   Special Standards: PWS
   River Mile: 2HRN001.38
   1-Day, 30-Year Low Flows: 0.00 MGD 0.00 cfs
   1-Day, 10-Year Low Flows: 0.001 MGD 0.002 cfs
   7-Day, 10-Year Low Flows: 0.003 MGD 0.004 cfs

30-Day, 10-Year Low Flows:	0.005 MGD	0.008	cfs
30-Day, 5-Year Low Flows:	0.011 MGD	0.017	cfs
1-Day, 10-Year High Flows:	0.060 MGD	0.093	cfs
7-Day, 10-Year High Flows:	0.071 MGD	0.110	cfs
30-Day, 10-Year High Flows:	0.119 MGD	0.183	cfs
Harmonic Mean Flow:	Undefined		
Tidal:	No		
On 303(d) List:	No		

See Flow Frequency Memo dated January 28, 2009 (Attachment 1)

8. **Operator License Requirements**: Class III
(9 VAC 25-790-300)

9. **Reliability Class**: Class II
(9 VAC 25-790-70)

10. **Permit Characterization:**

X Private ___ Federal _____ State __ POTW X PVOTW

___ Possible Interstate Effect _____ Interim Limits in Other Document

11. **Table 1: Wastewater Flow and Treatment**

Outfall Number	Discharge Source	Treatment	Flow Design Capacity
001	Residential wastewater from mobile home park	Comminutor/bar screen, extended aeration, clarification, chlorination, dechlorination, and post aeration.	0.039 MGD

(See Attachment 2 for facility diagram)

12. **Sewage Sludge Use or Disposal:**
Sewage sludge is pumped out and hauled away by a licensed contractor to Hopewell Regional WWTP (VA0066630). See Attachment 3 for haul route and map.

13. **Discharge Location Description**:
The facility discharges to Harrison Branch which is a tributary of the Appomattox River. See Attachment 3 for the Hopewell Quadrangle topographic map (099D).

14. **Material Storage**:
The facility stores sodium hypochlorite for disinfection and sodium bisulfite for dechlorination under roof.

15. **Ambient Water Quality Information**: No data has been collected from Harrison Branch. Therefore, the planning staff recommended using ambient water quality data collected at station 2-HRA000.85 on Harrison Creek at the Route 36 bridge. Harrison Creek is a tributary of the Appomattox River upstream from Harrison Creek. The ambient monitoring station is located approximately 1.5 miles from the discharge outfall. (Attachment 5 – email dated January 29, 2009 from J. Palmore to J. Bauer).

16. **Antidegradation Review & Comments:** **Tier 1 X Tier 2 _____ Tier 3 _____**
The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation

of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The limitations in this permit were developed in accordance with 303(d)(4) of the Clean Water Act. Therefore, antidegradation restrictions do not apply.

The antidegradation review begins with a Tier determination. The receiving stream, Harrison Branch, is considered to be a Tier 1 water body. This determination is based on modeling. See Flow Frequency Memo dated January 28, 2009 (Attachment 1).

17. **Site Inspection**: Date: December 9, 2008 Performed by: Mike Dare (See Attachment 4.)

18. **Effluent Screening & Limitation Development**:
The MSTRANTI WLA Spreadsheet was used to calculate acute and chronic WLAs. The WLAs are entered into the STATS.exe statistical software application to determine the need for a permit limitation and calculate the limitation. See Attachment 6 for DMR data and 7 for input data limitation development.

Table 2. Basis for Final Effluent Limitations in Part I.A.

Parameter	Limitation	Basis
Flow (MGD)	NL	Not Applicable
pH	6.0 to 9.0 Standard Units	Water Quality Standards; Federal Effluent Guidelines
$cBOD_5$	16 mg/L 2400 g/d, monthly avg 24 mg/L 3500 g/d, weekly avg	Water Quality Modeling (Aug 28, 2000)
Total Suspended Solids (TSS)	30 mg/L 4400 g/d, monthly avg 45 mg/L 6600 g/d, weekly avg	Federal Effluent Guidelines
Total Kjeldahl Nitrogen (TKN)*	11 mg/L 1600 g/d, monthly avg 16 mg/L 2400 g/d, weekly avg	Water Quality Modeling (Aug 28, 2000)
Ammonia as N (interim)	5.6 mg/L monthly and weekly avg	Water Quality Standards
Ammonia as N (final)	3.23 mg/L monthly and weekly avg	Water Quality Standards
Total Residual Chlorine (TRC)	0.0087 mg/L monthly avg 0.011 mg/L weekly avg	Water Quality Standards
Dissolved Oxygen	5.0 mg/L, minimum	Water Quality Modeling (Aug 28, 2000)
E. coli (N/100 mL)	126 Geometric Mean	Water Quality Standards

*Upon completion of the compliance schedule, TKN limitation will be removed. Ammonia limited to 3.23 mg/L is believed to be protective of water quality.

Ammonia: Acute and chronic WLAs of 12 mg/L and 1.6 mg/L, respectively, were entered into STATS.exe with a quantification level of 0.20 mg/L. An expected value of 9.00 mg/L was used as recommend by GM 00-2011 under both conditions. The evaluation of annual conditions resulted in a recommended ammonia limitation of 3.23 mg/L. The calculated ammonia limitation is more stringent than the previously permitted ammonia limitation. The facility will be given a compliance schedule for the more stringent limitation. Until such time that the new limitation goes into effect, the previous permit limitation will serve as an interim ammonia limitation.

Total Residual Chlorine (TRC): Acute and chronic WLA for TRC were calculated as 0.019 mg/L and 0.012 mg/L, respectively. Following the procedures in GM 00-2011, since the WLAa was less than 4.0 mg/L, the actual WLA were entered into STATS.exe to determine the need for a permit limitation and calculate the limitation. A quantification level of 0.10 mg/L and a data point of 20 mg/L were used as recommended by the VPDES permit manual. The evaluation produced recommended limitations of 0.0087 mg/L for average monthly and 0.011 mg/L for average weekly in order to protect water quality.

19. **Basis for Sludge Use & Disposal Requirements:**
N/A – Sludge from this facility is not land applied nor does the permit require sludge monitoring or limits.

20. **Antibacksliding Statement**:
9VAC 25-31-220.L and DEQ Guidance Memo 00-2011 do not allow re-issued permits to contain a less stringent water-quality based effluent limitation, unless under certain specified exceptions.

The TKN limitation will be removed from the permit upon the effective date of the new ammonia limitations. At that time the ammonia limitations will become protective of the TKN monthly and weekly average limitations. Therefore, backsliding does not occur.

All limits are at least as stringent as in the 2004 permit.

21. **Compliance Schedules:**
Rationale: The VPDES Permit Regulation at 9 VAC 25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them. 9VAC 25-31-250 states that the schedule may allow a reasonable period of time not to exceed the term of the permit."

A more stringent limitation for ammonia is assigned with this reissuance. It is the best professional judgment of staff that a four year schedule to achieve compliance with the new limitation is an appropriate and reasonable time. Annual reports of progress will be required each year preceding the final compliance deadline. In addition, the interim ammonia limitation of 5.6 mg/L remains effective until the conclusion of the compliance schedule.

22. **Special Conditions:**

B. Additional Chlorine Limitations and Monitoring Requirements
Rationale: Required by VA Water Quality Standards, 9VAC 25-260-170 B. Bacteria: other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

C.1. 95% Capacity Reopener
Rationale: Required by VPDES Permit Regulation, 9VAC 25-31-200 B 2 for all POTW and PVOTW permits.

C.2. O&M Manual Requirement
Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.

C.3. Licensed Operator Requirement
Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C. and the Code of Virginia §54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC 160-20-10 et seq.), require licensure of operators.

C.4. Reliability Class
Rationale: Required by Sewage Collection and Treatment Regulations, 9VAC 25-790 for all municipal facilities.

C.5. Financial Assurance and Disclosure to Purchasers
Rationale Required by Code of Virginia § 62.1.-44.18:3 and the Board's Financial Assurance Regulation, 9 VAC 25-650-10 et seq.

C.6. Sludge Reopener
Rationale: Required by VPDES Permit Regulation, 9VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage.

C.7. Sludge Use and Disposal
Rationale: VPDES Permit Regulation, 9VAC 25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

C.8. Compliance Reporting
Rationale: Authorized by VPDES Permit Regulation, 9VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

C.9. Materials Handling/Storage
Rationale: 9VAC 25-31-50 A. prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia Section §62.1-44.16 and §62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

C.10. CTC, CTO Requirement
Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790.

C.11. TMDL Reopener
Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act. This reopener is included in all permits.

D. Compliance Schedule
Rationale: The VPDES Permit Regulation at 9VAC 25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them. See discussion in item 21 above.

Part II, Conditions Applicable to All Permits
Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

23. **Changes to the Permit:**

Item	RATIONALE
Permit Cover Page: Initial paragraph; signatory authority, owner information	Updated language to reflect current agency guidance that incorporates the permit application as part of the permit. Owner updated based on new information determined during the permit renewal process.
Special Standards: NEW 18 removed	Special standard NEW-18 was repealed.
Section: Changed from 5 to 5b. **Class:** Changed from II to III. **Special Standards:** PWS added.	Review of discharge location and receiving stream indicates that previous permits incorrectly identified the receiving stream as a tidal tributary. Section, class, and special standards have been updated appropriately.

Part I.A:

Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
	From	To	From	To		
$cBOD_5$	-	-	2.4 kg/d 3.5 kg/d	2400 g/d 3500 g/d	Updated to provide consistency in load monitoring and limitation units and express limitation in 2 significant digits to be consistent with GM 06-2016.	2/09
TSS	-	-	4.4 kg/d 6.6 kg/d	4400 g/d 6600 g/d		
TKN (until completion of ammonia schedule of compliance)	-	-	1.6 kg/d 2.4 kg/d	1600 g/d 2400 g/d		
TKN (after completion of ammonia schedule of compliance)			11 mg/L 1.6 kg/d 16.5 mg/L 2.4 kg/d	REMOVED	Once the facility has demonstrated compliance with the new ammonia limitation, the 3.23 mg/L ammonia concentration limitation is protective of the TKN limitations.	2/09
Ammonia as N	-	-	5.6 mg/L	3.23 mg/L	Updated to reflect need for more stringent limitations to protect water quality, changes in flow frequency of receiving stream, and updated pH and temperature data.	2/09
E. coli	-	2/Month	-	126 N/100mL	Bacteria limitation added in accordance with procedures for facilities with a TMDL allocation	2/09
TRC	-	-	0.009 mg/L	0.0087 mg/L	Updated to express limitation in 2 significant digits to be consistent with GM 06-2016.	2/09

FROM	TO	RATIONALE
Part I.A.1.a	Footnote (1)	Updated language to reflect current VPDES Permit Manual dated February 16, 2007.
New	Footnote (2)	Updated language to reflect current VPDES Permit Manual dated February 16, 2007.
Part I.A.1.b	Footnote (3)	Updated language to reflect current VPDES Permit Manual dated February 16, 2007.
New	Footnote (4)	Updated language to reflect current VPDES Permit Manual dated February 16, 2007.
Part I.A.3	Part I.A.1.a	No Change
Part I.A.2	Removed	Removed language to reflect current VPDES Permit Manual dated February 16, 2007.

Special Condition Changes:

FROM	TO	RATIONALE
B.	B.	**TRC Limitations and Monitoring Requirements:** Updated language to reflect current VPDES Permit Manual dated February 16, 2007. 0.6 mg/L changed to 0.60 mg/L to reflect significant digit guidance. TRC concentration was changed from 1.0 to 1.5 mg/L since the facility discharges to a water body designated as PWS.
C.1	C.1	**95% Capacity Reopener**: Updated language to reflect current VPDES Permit Manual dated February 16, 2007.
C.2	C.2	**Operations and Maintenance Manual Requirement:** Updated language to reflect current VPDES Permit Manual dated February 16, 2007.
C.3	C.3	**Licensed Operator Requirement:** No Change
C.4	C.4	**Reliability Class:** No Change
C.5	C.5.	**Financial Assurance:** No Change
C.7	C.6	**Sludge Reopener:** No Change
C.9	C.7	**Sludge Use and Disposal:** Updated language to reflect current VPDES Permit Manual dated February 16, 2007. Change also reflects transfer of the program from VDH to DEQ.
C.8	C.8	**Compliance Reporting:** Updated language to reflect current agency guidance on compliance reporting and significant digits.
C.11	C.9	**Materials Handling/Storage:** No Change
New	C.10	**CTC, CTO Requirement:** New condition. Added to reflect current VPDES Permit Manual dated February 16, 2007.
New	C.11	**TMDL Reopener:** New condition. Added to reflect current VPDES Permit Manual dated February 16, 2007.
C.6	Removed	**NEW reopener:** Since the NEW-18 standard has been appealed and no longer applies to the facility, the NEW reopener language has been removed.
C.10	Removed	**Ground water Monitoring:** A ground water monitoring plan is no longer required since the facility has closed the sludge lagoons. See item 27a below.
New	D	**Schedule of Compliance:** Evaluation of ammonia indicated a needed for a more stringent limitation to maintain water quality.

24. **Variances/Alternate Limits or Conditions**:
None

25. **Regulation of Users (9 VAC 25-31-280 B 9):**
There are no industrial dischargers contributing to the treatment works.

26. **Public Notice Information required by 9 VAC 25-31-280 B**:
All pertinent information is on file and may be inspected, and copied by contacting:

Ms. Jaime Bauer at:
Virginia DEQ Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060
Telephone No. (804) 527-5015
Email Address: Jaime.bauer@deq.virginia.gov

DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all

persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment.

27. **Additional Comments**:

a. Previous Board Action:

Consent order dated May 7, 2002: This consent order rectified issues concerning (1) the facility's failure to turn in plans and specifications as required by the previous permit; (2) the failure to perform instream monitoring for 3 months; and (3) violations of ammonia shown on DMRs. The order also required the payment of $2,800.

Additionally, the facility entered into another consent order in March 2006 for failure to submit a ground water monitoring plan and violations of effluent limitations. As part of the consent order, the facility was required to submit a ground water monitoring plan to the Department or close the sludge lagoon. A closure plan was submitted by the permittee and approved by OWE staff on March 27, 2006. The Piedmont regional office water compliance staff confirmed that the lagoon was closed, influent pipes have been removed, wastewater pumped out and remaining material limed. As included in the closure plan, the lagoon has been allowed to fill with rain water. Since the conditions of the consent order were met it was de-referred by enforcement staff on May 28, 2009.

b. Staff Comments:

- In order to be considered for reduced monitoring, the facility must not have been issued any Warning Letters, Notices of Violation, or Notices of Unsatisfactory Laboratory Evaluation, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years. Reduced monitoring was not considered because at the time of application, the facility was still under a Consent Order with DEQ effective on March 16, 2006 due to failure to submit a groundwater monitoring plan and effluent violations for pH, DO, TSS, ammonia, TKN, and chlorine August through November 2005.

- This facility is not subject to the General VPDES Watershed Permit Regulations for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia because the current flow of the facility is less than 40,000 gallons per day (non-tidal significant discharger), and the facility is not expanding. The facility does not have nutrient allocations because the facility is not considered a significant discharger of nutrients. However, the facility has a nutrient permitted design capacity of 2221.1 pounds per year Total Nitrogen and 296.9 pounds per year Total Phosphorus, calculated based on secondary technology concentrations values and the current design capacity of 0.039 MGD.

- This permit expired due to an extensive review by regional and central office staff of ownership information, SCC requirements, and Financial Assurance documentation.

- The Closure plan special condition was not included in the permit because it is addressed in the Financial Assurance documentation requirement.

c. Public Comment: TBD

28. **303(d) Listed Segments (TMDL)**:
The facility discharges directly to Harrison Branch that was not assessed during the 2008 305(b)/303(d) Water Quality Assessments. However, the facility received an E. coli wasteload allocation of 6.81E +10 cfu/yr in the Appomattox River Basin Bacteria TMDL due to downstream impairment of the Appomattox River. The wasteload allocation is based on the facility's permitted flow of 0.039 MGD and an E. coli count of 126 N/100 mL. EPA approved the TMDL on August 30, 2004 and the SWCB approved it on December 20, 2005. The TMDL was modified to increase WLAs for several new and existing point sources not addressed in the original TMDL. The modification was approved by the EPA on January 5, 2009. The permit includes an effluent E. coli limitation of 126 N/mL in order to meet the TMDL wasteload allocation

29. **Summary of Attachments:**
1. Planning and Modeling Documentation
2. Facility Diagram
3. Topographic Map & Sludge Haul Route Directions
4. Site Inspection
5. STORET Data
6. DMR Data
7. WLA Spreadsheet and Limitation Development
8. 2004 Permit Ammonia Limitation Documentation

Attachment 1 – Planning and Modeling Documentation

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination \ 303(d) Status
Red Hill Mobile Home Park STP – VA0028258

TO: Jaime Bauer

FROM: Jennifer Palmore, P.G.

DATE: January 28, 2009

COPIES: File

Red Hill Mobile Home Park discharges to Harrison Branch near Colonial Heights, VA. The discharge is located at rivermile 2-HRN001.38. Flow frequencies for Harrison Branch at the confluence have been requested at this site for use in developing effluent limitations for the VPDES permit.

The DEQ conducted several flow measurements above the Red Hill Mobile Home Park STP outfall (#02041790) from 1996 to 2002. The measurements and daily mean values for the continuous record gage on Deep Creek near Mannboro, VA (#02041000) were plotted on a logarithmic graph and a power trend line was drawn through the data points. An excellent correlation was obtained. The flow frequencies for the measurement site were calculated by plugging the gage flow frequencies into the equation for the regression line. Due to the proximity of the outfall and measuring point, the resultant flows are assumed to be equal. The analysis is attached. The data for the reference gage and the measurement site are presented below:

Deep Creek near Mannboro, VA (#02041000):

Drainage area: 158 mi^2

1Q30 = 0.21 cfs	High Flow 1Q10 = 25 cfs
1Q10 = 0.80 cfs	High Flow 7Q10 = 29 cfs
7Q10 = 1.0 cfs	High Flow 30Q10 = 46 cfs
30Q10 = 2.8 cfs	HM = undefined
30Q5 = 5.3 cfs	

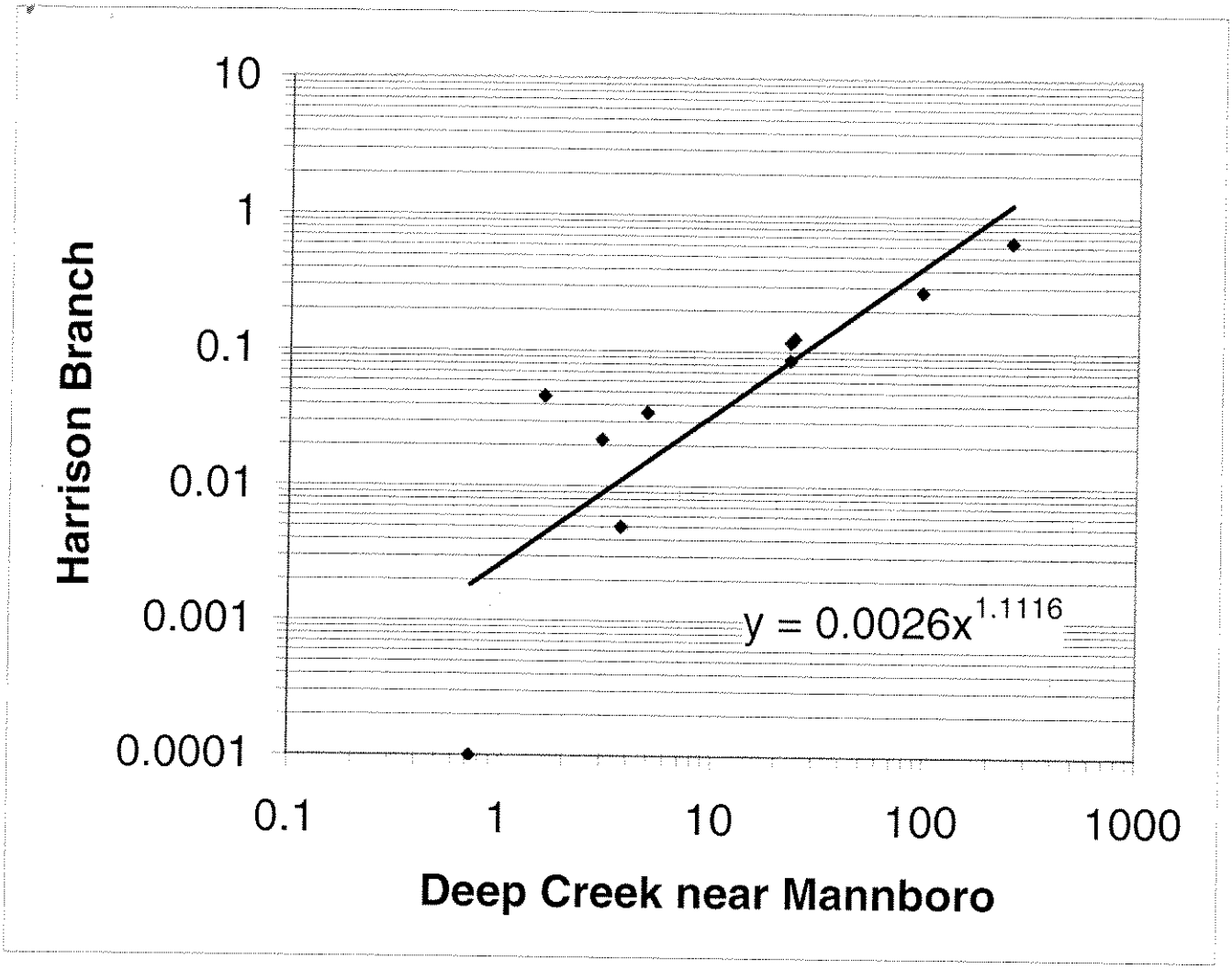
Harrison Branch above STP, near Colonial Heights, VA (#02041790):

Drainage Area: 1.59 mi^2
Statistical period: 1947-2003

1Q30 = 0.000 cfs (0.000 MGD)	High Flow 1Q10 = 0.093 cfs (0.060 MGD)
1Q10 = 0.002 cfs (0.001 MGD)	High Flow 7Q10 = 0.110 cfs (0.071 MGD)
7Q10 = 0.004 cfs (0.003 MGD)	High Flow 30Q10 = 0.183 cfs (0.119 MGD)
30Q10 = 0.008 cfs (0.005 MGD)	HM = undefined
30Q5 = 0.017 cfs (0.011 MGD)	

This analysis does not address any withdrawals, discharges, or springs located between the measuring point and the outfall. The high flow months are December through April.

Harrison Branch above STP, near Colonial Heights, VA (#02041790)
vs Deep Creek near Mannboro, VA (#02041000)



Flow Data (cfs)

Date	Deep	Harrison
5/9/1996	253	0.644
6/24/1996	23	0.086
5/12/1997	96	0.277
6/26/1997	23	0.117
10/9/1997	4.9	0.035
8/24/1998	3.0	0.022
9/28/1998	3.7	0.005
5/13/1999	24	0.125
8/16/1999	1.6	0.046
8/8/2002	0.73	0.0001

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.992797
R Square	0.985645
Adjusted R Square	0.983851
Standard Error	0.024983
Observations	10

Flow Frequencies (cfs)

Deep		Harrison
0.21	1Q30	0.000
0.80	1Q10	0.002
1.6	7Q10	0.004
2.8	30Q10	0.008
5.3	30Q5	0.017
25	HF 1Q10	0.093
29	HF 7Q10	0.11
46	HF30Q10	0.18
--	HM	--
158	DA	1.59
	Dec-Apr	
	1947-2003	

Changed from 0.00 for graphing purposes. 0.0001 used per Paul Herman

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Water Regional Office

4949-A Cox Road, Glen Allen, VA 23060-6296 804/527-5020

SUBJECT: Planning Level Stream Sanitation Analysis
Discharge to Harrison Branch
Red Hill Mobile Home Park STP (VA0028258)

TO: Diane Cook

FROM: Jennifer Palmore

DATE: August 28, 2000

COPIES: Curt Linderman, VA0028258 Model File

A stream sanitation analysis for the subject discharge was performed to determine whether the existing effluent limits are appropriate to maintain the dissolved oxygen (DO) standard in the receiving stream. The discharge is to Harrison Branch, a tributary to the Appomattox River, at river mile 2-HRN001.38. The discharge is located in Prince George County in watershed VAP-J15R. A model request was initially received in February 1997 when an application to reissue the permit was being processed. At the time, the discharge was considered unmodelable because of an apparent lack of confidence by Paul Herman in the flow frequency analysis. Paul recommended that site-specific flow measurements be performed.

A second model request was received on July 17, 2000. The permittee is required to upgrade the plant to achieve an existing ammonia limit; therefore, the permit limits should be reviewed before the upgrade occurs. I contacted Paul Herman regarding the project; he stated that nine flow measurements had been taken at the site. His subsequent memorandum dated July 31, 2000 states that he determined the 7Q10 flow of the receiving stream to be 0.014 mgd.

A site visit was performed on August 24, 2000 by Jennifer Palmore, Jon van Soestbergen, and Jason Dameron. The current VPDES permitted effluent limits related to the DO standard are 30 mg/l BOD_5 and 5 mg/l dissolved oxygen. Because the existing ammonia limit is a water quality-based limit and because the permittee is not currently meeting that limit, Harrison Branch was considered a Tier 1 water from the discharge location to its confluence with the Appomattox River. Antidegradation was not applied to the discharge.

The Regional Model v3.2 was used for analysis. A temperature of 24.3°C was used; this temperature was calculated by Diane Cook and represents the 90th percentile of the upstream stream water temperatures sampled by Red Hill Mobile Home Park as part of their stream monitoring plan. A dissolved oxygen limit (minimum) of 5 mg/L was maintained.

The permittee has previously been unable to consistently meet the limit, so planning staff recommends that the limit not be increased. A limit of 11 mg/L for Total Kjeldahl Nitrogen (TKN) was chosen because Diane Cook determined that an ammonia limit of 5.6 mg/L is required to maintain water quality standards. Planning staff chose a TKN limit of approximately twice the ammonia limit. The model was used to calculate the required $cBOD_5$ effluent limit.

The model predicts the following effluent limits would be necessary to ensure that water quality standards for dissolved oxygen are not violated in the modeled segment:

Flow:	0.039 mgd
$cBOD_5$:	16 mg/l
TKN:	11 mg/l
DO:	5 mg/l

The model predicts that DO concentrations decline downstream of the discharge and reach a minimum (sag point) approximately 0.4 miles downstream of the discharge location. The DO concentration does not fully recover by the end of the segment.

The model documentation is attached. Should you have any questions, please do not hesitate to ask.

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REGIONAL MODELING SYSTEM VERSION 3.2

DATA FILE SUMMARY

****

THE NAME OF THE DATA FILE IS: REDHILL4.MOD

THE STREAM NAME IS: Harrison Branch
THE RIVER BASIN IS: James River (Middle)
THE SECTION NUMBER IS: 2
THE CLASSIFICATION IS: II

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: Red Hill Mobile Home Park STP

PROPOSED LIMITS ARE:
FLOW = .039 MGD
BOD5 = 16 MG/L
TKN = 11 MG/L
D.O. = 5 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 1

7Q10 WILL BE CALCULATED BY: DRAINAGE AREA COMPARISON
THE GAUGE NAME IS: Deep Creek near Mannboro #02041000
GAUGE DRAINAGE AREA = 158 SQ.MI.
GAUGE 7Q10 = .776 MGD
DRAINAGE AREA AT DISCHARGE = 1.28 SQ.MI.

STREAM A DRY DITCH AT DISCHARGE (Y/N) = N
ANTIDEGRADATION APPLIES (Y/N) = N

ALLOCATION DESIGN TEMPERATURE = 24.3 °C

SEGMENT INFORMATION

####### SEGMENT # 1 #######

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH = 1 MI

SEGMENT WIDTH = 1 FT
SEGMENT DEPTH = .167 FT
SEGMENT VELOCITY = .49 FT/SEC

DRAINAGE AREA AT SEGMENT START = 1.2 SQ.MI.
DRAINAGE AREA AT SEGMENT END = 1.6 SQ.MI.

ELEVATION AT UPSTREAM END = 55 FT
ELEVATION AT DOWNSTREAM END = 20 FT

THE CROSS SECTION IS: RECTANGULAR
THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = N

THE BOTTOM TYPE = SILT
SLUDGE DEPOSITS = TRACE
AQUATIC PLANTS = NONE
ALGAE OBSERVED = NONE
WATER COLORED GREEN (Y/N) = N

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
08-28-2000 12:02:19

****

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Red Hill Mobile Home Park STP DISCHARGE

TO Harrison Branch

THE SIMULATION STARTS AT THE Red Hill Mobile Home Park STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .039 MGD cBOD5 = 16 Mg/L TKN = 11 Mg/L D.O. = 5 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.013 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00629 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.578 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	1.00	0.413	20.000	1.400	0.500	0.913	37.50	24.30	8.421

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0453 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	5.358	35.141	29.831
0.100	0.100	5.191	34.266	29.526
0.200	0.200	5.092	33.412	29.223
0.300	0.300	5.041	32.580	28.924
0.400	0.400	5.025	31.768	28.628
0.500	0.500	5.033	30.977	28.335
0.600	0.600	5.058	30.206	28.045
0.700	0.700	5.095	29.453	27.757
0.800	0.800	5.140	28.719	27.473
0.900	0.900	5.191	28.004	27.192
1.000	1.000	5.245	27.306	26.913

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
08-28-2000 12:00:18

DATA FILE = REDHILL4.MOD

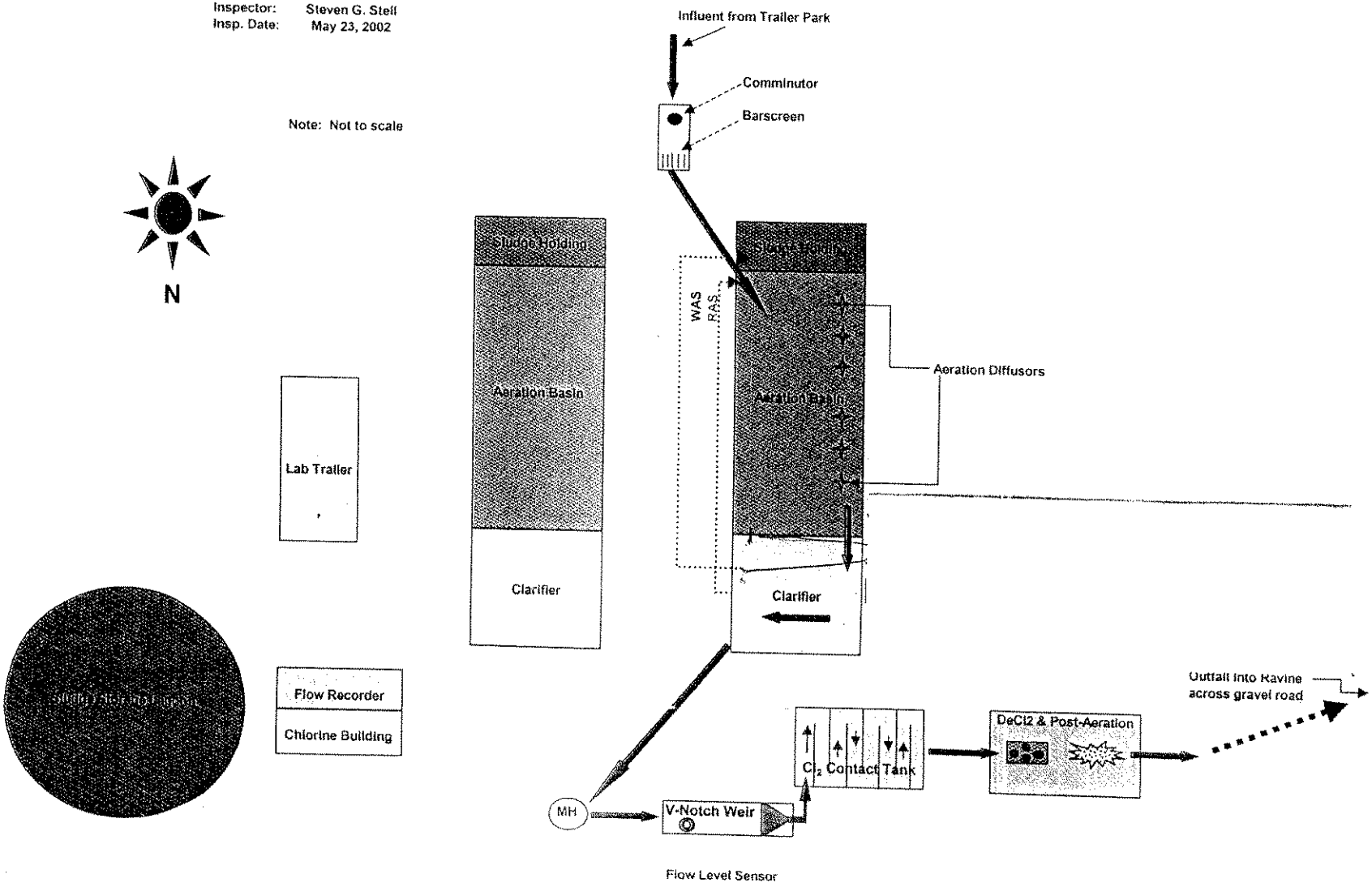
Attachment 2 - Facility Diagram

Red Hill Trailer Park - Prince George County

#VA0028258

Inspector: Steven G. Steli
Insp. Date: May 23, 2002

Note: Not to scale



Attachment 3 – Topographic Map & Sludge Haul Route Directions

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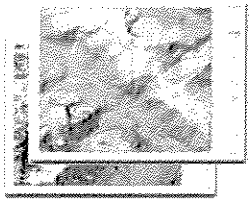
WATERPROOF PRINTS



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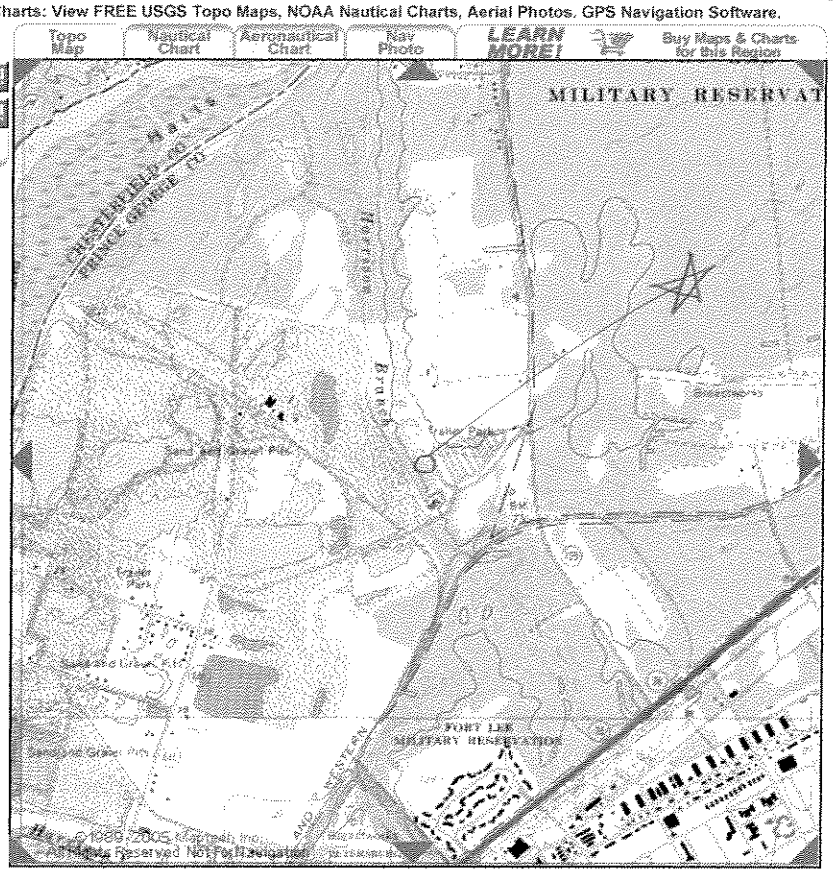

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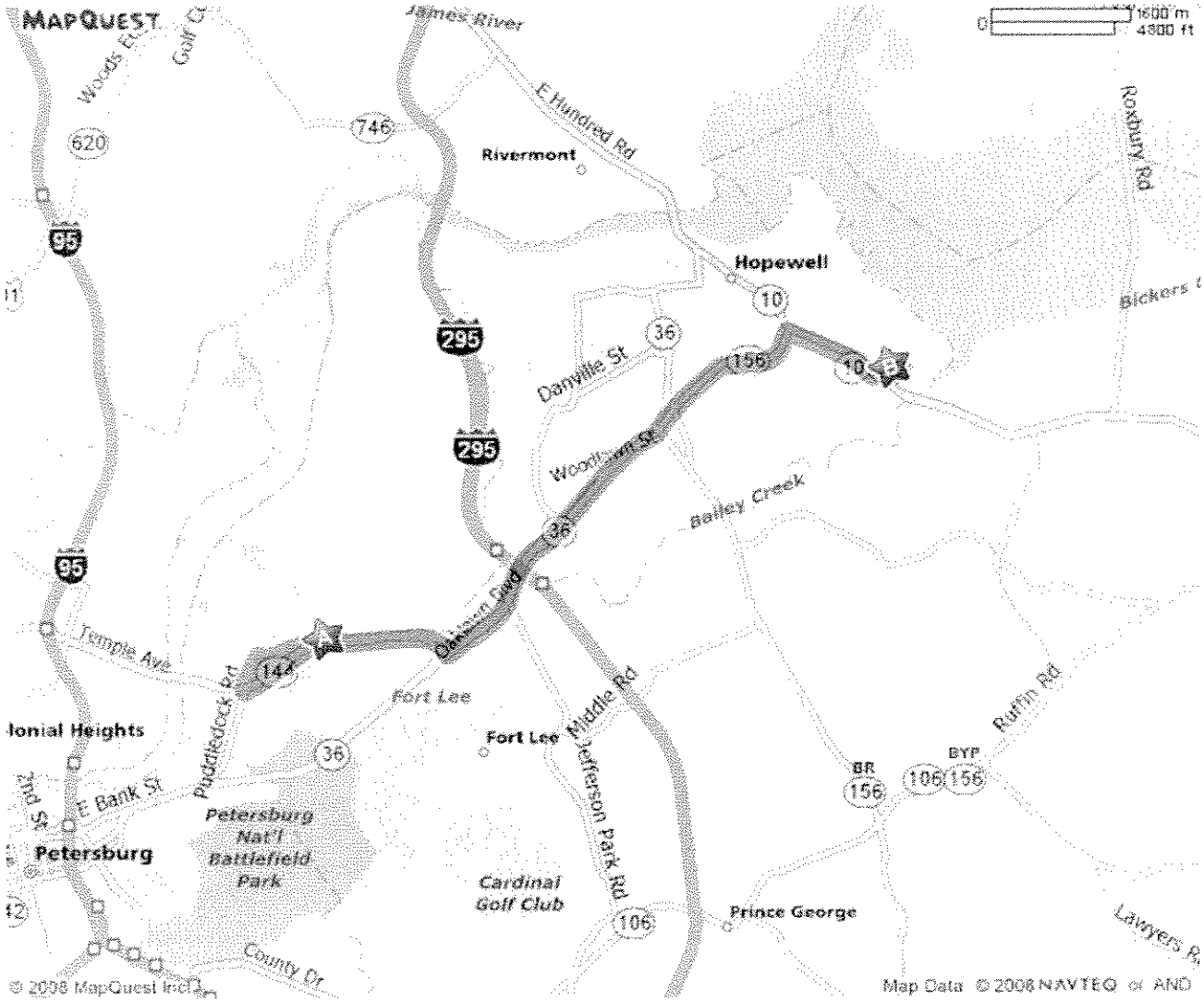
TERMS AND CONDITIONS



Attachment 4 – Site Inspection

R/R LEFT

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE
4949-A Cox Road, Glen Allen, Virginia 23060
(804) 527-5020 Fax (804) 527-5106
www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

Gerard Seeley, Jr.
Regional Director

December 16, 2008

Mr. C. Ray Beard
Red Hill Mobile Home Park
3812 Puddledock Road
Prince George, VA 23875

Re: Inspection, VPDES Permit No. VA0028258, Red Hill Mobile Home Park STP, Prince George, VA

Dear Mr. Beard,

Enclosed is the report for the subject inspection conducted on December 9, 2008. Please review the report carefully especially the "Required Corrective Actions" on page 7.

Provide a written response, citing corrective actions, within 30 days of receipt of this letter.

If you have any questions regarding this report, please contact me at (804) 527-5055.

Sincerely,

Mike Dare

Mike Dare
Water Inspector

Cc: DEQ – Technical File
S. STELL

Virginia Department of Environmental Quality

FOCUSED CEI TECH/LAB INSPECTION REPORT

FACILITY NAME: Red Hill Mobile Home Park STP		**INSPECTION DATE:**	December 9, 2008
		INSPECTOR	Mike Dare MD 12/15/08
PERMIT No.: VA0028258		**REPORT DATE:**	December 15, 2008
TYPE OF FACILITY: ☑ Municipal ☐ Major ☐ Industrial ☐ Minor ☐ Federal ☑ Small Minor ☐ HP ☐ LP		**TIME OF INSPECTION:**	Arrival 0930 / Departure 1145
		TOTAL TIME SPENT (including prep & travel)	14 hours
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?** ☑ Yes ☐ No	
REVIEWED BY / Date: Chris Modica 12/16/08 Kim 12/16/08			
PRESENT DURING INSPECTION: Joseph Joseph, James Berry			

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments:	☐ Yes ☑ No
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments: **Existing O&M manual requires updating**	☐ Yes ☑ No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments: **Permit requires a Class III Operator; Mr. Joseph is a Class I Operator**	☑ Yes ☐ No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments:	☑ Yes ☐ No
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No
6. Are preventive maintenance task schedules being met? Comments:	☑ Yes ☐ No
7. Does the plant experience any organic or hydraulic overloading? Comments: **Heavy rain causes washout of solids from clarifier**	☑ Yes ☐ No
8. Have there been any bypassing or overflows since the last inspection? Comments: **11/13/06 and 11/23/06 due to blockages at headworks**	☑ Yes ☐ No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments: **N/A, The plant does not have a standby generator**	☐ Yes ☐ No
10. Is the plant alarm system operational and tested regularly? Comments: **N/A, The plant does not have an alarm system**	☐ Yes ☐ No

TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? Comments: **Hauled by "Johnny on the Spot" to Hopewell Regional WWTP**	☑ Yes ☐ No
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? Comments:	☐ Yes ☑ No
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? Comments:	☑ Yes ☐ No

14. Which of the following records does the plant maintain?

☑ Operational logs ☐ Instrument maintenance & calibration

☑ Mechanical equipment maintenance ☐ Industrial Waste Contribution (Municipal facilities)

Comments:

15. What does the operational log contain?

☑ Visual observations ☐ Flow Measurement ☐ Laboratory results ☑ Process adjustments

☐ Control calculations ☐ Other (specify)

Comments:

16. What do the mechanical equipment records contain?

☐ As built plans and specs ☑ Manufacturers instructions ☐ Lubrication schedules

☑ Spare parts inventory ☐ Equipment/parts suppliers

☐ Other (specify)

Comments:

17. What do the industrial waste contribution records contain (Municipal only)?

☐ Waste characteristics ☐ Impact on plant ☐ Locations and discharge types

☐ Other (specify)

Comments: **N/A**

18. Which of the following records are kept at the plant and available to personnel?

☑ Equipment maintenance records ☑ Operational log ☐ Industrial contributor records

☐ Instrumentation records ☑ Sampling and testing records

Comments:

19. List records not normally available to plant personnel and their location:

Comments: **All are available**

20. Are the records maintained for the required time period (three or five years)? Comments:	☑ Yes ☐ No

UNIT PROCESS EVALUATION SUMMARY SHEET

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping	N/A		*Collection system and WWTP flow is entirely by gravity*
Flow Measurement (Influent)	N/A		
Screening/Comminution	Yes	None	*Comminutor removed for increased reliability*
Grit Removal	N/A		
Oil/Water Separator	N/A		
Flow Equalization	N/A		
Ponds/Lagoons	N/A		
Imhoff Tank	N/A		
Primary Sedimentation	N/A		
Trickling Filter	N/A		
Septic Tank and Sand Filter	N/A		
Rotating Biological Contactor	N/A		
Activated Sludge Aeration	Yes	None	
Biological Nutrient Removal	N/A		
Sequencing Batch Reactor	N/A		
Secondary Sedimentation	Yes	1	*Rising solids and turbid water in clarifier*
Flocculation	N/A		
Tertiary Sedimentation	N/A		
Filtration	N/A		
Micro-Screening	N/A		
Activated Carbon Adsorption	N/A		
Chlorination	Yes	None	
Dechlorination	Yes	None	
Ozonation	N/A		
Ultraviolet Disinfection	N/A		
Post Aeration	Yes	None	
Flow Measurement (Effluent)	Yes	1	*Remove leaves from chamber, check calibration*
Land Application (Effluent)	N/A		
Plant Outfall	Yes	None	
Sludge Pumping	Yes	None	*Wasted sludge is hauled as required by contractor to Hopewell Regional WWTP*
Flotation Thickening (DAF)	N/A		
Gravity Thickening	N/A		
Aerobic Digestion	N/A		
Anaerobic Digestion	N/A		
Lime Stabilization	N/A		
Centrifugation	N/A		
Sludge Press	N/A		
Vacuum Filtration	N/A		
Drying Beds	N/A		
Thermal Treatment	N/A		
Incineration	N/A		
Composting	N/A		
Land Application (Sludge)	N/A		

* Problem Codes

1. Unit Needs Attention
2. Abnormal Influent/Effluent
3. Evidence of Equipment Failure
4. Unapproved Modification or Temporary Repair
5. Evidence of Process Upset
6. Other (explain in comments)

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

The comminutor was reportedly not reinstalled following two incidents of blockage that resulted in overflows. Routine manual cleaning of bar screen appears adequate.

One of two treatment trains was in operation. The other treatment train was empty except for sludge being stored in the sludge storage chamber. Each treatment train consists of a small aeration basin, clarifier and sludge holding tank packaged together.

The treatment train currently in use was refurbished and placed in service in early 2006.

The mixed liquor in the aeration basin was medium brown with very little odor, however, there was a thick dark foam over much of the basin. 30 minute settleability readings averaged 376 ml/l for October 2008. Two blowers (operation rotated periodically) provide aeration.

The clarifier was somewhat turbid with some rising clumps of solids.

Hypochlorite was being pumped to the head of the chlorine contact tank.

A four tube de-chlor unit provides dechlorination.

A dedicated blower provides post aeration.

LABORATORY INSPECTION

PRESENT DURING INSPECTION: Joseph Joseph, James Berry

1. Do lab records include sampling date/time, analysis date/time, sample location, test method, test results, analyst's initials, instrument calibration and maintenance, and Certificate of Analysis?
   - ☑ Sampling Date/Time ☑ Analysis Date/Time ☑ Sample Location ☐ Test Method ☑ Test Results
   - ☑ Analyst's Initials ☑ Instrument Calibration & Maintenance
   - ☑ Chain of Custody ☑ Certificate of Analysis

2. Are Discharge Monitoring Reports complete and correct? Month(s) reviewed: October 2008		☑ Yes ☐ No
3. Are sample location(s) according to permit requirements (after all treatment unless otherwise specified)?		☑ Yes ☐ No
4. Are sample collection, preservation, and holding times appropriate; and is sampling equipment adequate?		☑ Yes ☐ No
5. Are grab and composite samples representative of the flow and the nature of the monitored activity? **All samples are grab-type**		☑ Yes ☐ No
6. If analysis is performed at another location, are shipping procedures adequate? List parameters and name & address of contract lab(s): • **CBOD5, TSS, Ammonia, TKN – Microbac Laboratories, Richmond, VA**		☑ Yes ☐ No
7. Is Laboratory equipment in proper operating range?		☐ Yes ☑ No
8. Are annual thermometer calibration(s) adequate?		☐ Yes ☑ No
9. Is the laboratory grade water supply adequate?	N/A	☐ Yes ☐ No
10. Are analytical balance(s) adequate?	N/A	☐ Yes ☐ No

11. Parameters evaluated during this inspection (attach checklists):
    - ☑ pH
    - ☐ Temperature
    - ☑ Total Residual Chlorine
    - ☑ Dissolved Oxygen
    - ☐ Biochemical Oxygen Demand
    - ☐ Total Suspended Solids
    - ☐ Other (specify) _____
    - ☐ Other (specify) _____
    - ☐ Other (specify) _____

Comments: **See checklists**

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0028258

EFFLUENT FIELD DATA: Performed at time of inspection

Flow	MGD	**Dissolved Oxygen**	mg/L	**TRC (Contact Tank)**	>2.2 mg/L
pH	6.98 S.U.	**Temperature**	14.7 °C	**TRC (Final Effluent)**	0.00 mg/L

Was a Sampling Inspection conducted? ☐ Yes (see Sampling Inspection Report) ☑ No

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☑ Shore based ☐ Submerged Diffuser? ☐ Yes ☑ No

2. Are the outfall and supporting structures in good condition? ☑ Yes ☐ No

3. Final Effluent (evidence of following problems):
   ☐ Sludge bar ☐ Grease
   ☐ Turbid effluent ☐ Visible foam ☐ Unusual color ☐ Oil sheen

4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☑ No

5. Receiving stream: ☑ No observed problems ☐ Indication of problems (explain below)
   Comments: **Discharge from plant is to an apparent wetland**

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0028258

REQUIRED CORRECTIVE ACTIONS:

1. Please discuss the status of the treatment train currently not in use. This train should be fully operational in the event of a problem with the train currently in use.

2. To promote higher quality sludge it is recommended that a supplement such as dry molasses be added during periods of low settleabilities to give the biomass a boost. Returning sludge from the sludge holding tank to the aeration tank to increase the amount of solids in the system is strongly discouraged.

3. The flow measurement chamber should be kept free of leaves. Even though effluent flow is an estimate, it is recommended that the effluent flow meter be calibrated periodically to ensure that the meter is reasonably accurate.

4. Effluent flow following heavy rain events has been reported as high as twice the rated flow of the treatment plant. Considering that only one treatment train is in service, this is actually four times the rated flow. This has caused a washout of solids from the clarifier on several occasions since June of 2006. Please note that it is a violation of the discharge permit to discharge solids in other than trace amounts. It is recommended that an infiltration/inflow (I/I) study of the collection system be performed and appropriate repairs made to reduce or eliminate future I/I related permit violations.

5. Permittee must have available one of the "Methods of Analysis" for the each of the field instruments in use. See attached checklists.

6. A certificate of operator competence or initial demonstration of capability must be performed by all Operators for each field analysis being performed

7. It was noted that the "check sample" following calibration of the pH meter was not always within +/-0.1 SU of the known concentration of the sample. Measures should be taken to correct this deficiency. Typically problems of this nature are probe related.

8. pH buffers are not within their shelf life and should be replaced.

9. pH and DO Instrument thermisters must be verified annually against a NIST traceable thermometer.

NOTES and COMMENTS:

As a reminder, the O&M manual will need to be brought up-to-date and submitted for approval or a statement submitted confirming the accuracy and completeness of the current O&M manual within 90 days of the effective date of a new permit. (Current permit to expire April 1, 2009.)

A lagoon closure plan was received and subsequently approved by this office on March 27, 2006. Completion of the lagoon closure was noted in the letter that accompanied the DMR submitted for June 2006. Since the closure, the lagoon has partially refilled with rainwater as allowed in the approved closure plan. This information will be forwarded to Ms. Jaime Bauer, Permit Writer, as Ms. Bauer is working on the new permit application submittal.

VA DEQ Focused CEI Tech/Lab Inspection Report

ANALYST:	**Joseph Joseph**	VPDES NO	**VA0028258**

Meter: HACH Sension I Parameter: Hydrogen Ion (pH)
1/08

Method: Electrometric
METHOD OF ANALYSIS:

	18th Edition of Standard Methods – 4500-H^+ B
	21st or Online Editions of Standard Methods – 4500-H^+ B (00)

	pH is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE**: Analyze 4 samples of known pH. May use external source of buffer (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be +/- 0.1 SU of the known concentration of the sample. [SM 1020 B.1]		**New guid-ance**
2)	Is the electrode in good condition (no chloride precipitate, scratches, deterioration, etc.)? [2.b/c and 5.b]	X	
3)	Is electrode storage solution in accordance with manufacturer's instructions? [Mfr.]	X	
4)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [4.a] **NOTE**: Follow manufacturer's instructions.	X	
5)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Agreement should be within +/- 0.1 SU. [4.a]		X
6)	Do the buffer solutions appear to be free of contamination or growths? [3.1]	X	
7)	Are buffer solutions within the listed shelf-life or have they been prepared within the last 4 weeks? [3.a]		X
8)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.] **Gel**	N/A	
9)	For meters with ATC that also have temperature display, is the thermometer verified annually? [SM 2550 B.1]		X
10)	Is temperature of buffer solutions and samples recorded when determining pH? [4.a]	X	
11)	Is sample analyzed within 15 minutes of collections? [40 CFR Part 136]	X	
12)	Is the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinsing solution.)? [4.a]	X	
13)	Is the sample stirred gently at a constant speed during measurement? [4.b]	X	
14)	Does the meter hold a steady reading after reaching equilibrium? [4.b]	X	
15)	Is a duplicate sample analyzed after every 20 samples if citing 18th or 19th Edition or daily for 20th or 21st Edition? [Part 1020] **NOTE**: Not required for *in situ* samples.	N/A	
16)	Is the pH of duplicate samples within 0.1SU of the original sample? [Part 1020]	N/A	
17)	Is there a written procedure for which result will be reported on DMR (Sample or Duplicate) and is this procedure followed? [DEQ]	N/A	

PROBLEMS: Permittee must have available one of the "Methods of Analysis" as indicated above. (1) An initial demonstration of capability must be available for each Operator performing pH analysis. (5) Check sample not always within +/- 0.1. (7) Buffers are not within their shelf life and should be replaced. (9) Instrument thermister must be verified annually against a NIST traceable thermometer. (15 - 17) Duplicate sample analysis is no longer required by DEQ for field instruments.

VA DEQ Focused CEI Tech/Lab Inspection Report

ANALYST:	Joseph Joseph	VPDES NO.	VA0028258

Instrument: HACH Pocket Colorimeter II Parameter: Total Residual Chlorine (TRC)
Method: DPD Colorimetric (HACH Pocket Colorimeter)
1/08

METHOD OF ANALYSIS:

HACH Manufacturer's Instructions (Method 8167) plus an edition of *Standard Methods*

	18th Edition of *Standard Methods* 4500-Cl G
	21st Edition of *Standard Methods* 4500-Cl G (00)

		Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE:** Analyze 4 samples of known TRC. Must use a lot number or source that is different from that used to prepare calibration standards. May not use Spec√ ™. [SM 1020 B.1]		New guid-ance
2)	Are the DPD PermaChem™ Powder Pillows stored in a cool, dry place? [Mfr.]	X	
3)	Are the pillows within the manufacturer's expiration date? [Mfr.]	X	
4)	Has buffering capability of DPD pillows been checked annually? (Pillows should adjust sample pH to between 6 and 7) [Mfr.]	X	
5)	When pH adjustment is required, is H_2SO_4 or NaOH used? [Hach 11.3.1]	X	
6)	Are cells clean and in good condition? [Mfr]	X	
7)	Is the low range (0.01 mg/L resolution) used for samples containing residuals from 0.2.00 mg/L? [Mfr.]	X	
8)	Is calibration curve developed (may use manufacturer's calibration) with daily verification using a high and a low standard? **NOTE:** May use manufacturer's installed calibration and commercially available chlorine standards for daily calibration verifications. [18th ed 1020 B.5; 21st ed 4020 B.2.b]	X	
9)	Is the 10-mL cell (2.5-cm diameter) used for samples from 0-2.00 mg/L? [Mfr.]	X	
10)	Is meter zeroed correctly by using sample as blank for the cell used? [Mfr.]	X	
11)	Is the instrument cap placed correctly on the meter body when the meter is zeroed and when the sample is analyzed? [Mfr.]	X	
12)	Is the DPD Total Chlorine PermaChem™ Powder Pillow mixed into the sample? [Hach 11.1]	X	
13)	Is the analysis made at least three minutes but not more than six minutes after PermaChem™ Powder Pillow addition? [Hach 11.2]	X	
14)	If read-out is flashing [2.20], is sample diluted correctly, and then reanalyzed? [Hach 1.2 & 2.0]	X	
15)	Are samples analyzed within 15 minutes of collection? [40 CFR Part 136]	X	
16)	Is a duplicate sample analyzed after every 20 samples if citing 18th Edition [SM 1020 B.6] or daily for 21st Edition [SM 4020 B.3.c]?	N/A	
17)	If duplicate sample is analyzed, is the relative percent difference (RPD) ≤ 20? [18th ed. Table 1020 I; 21st ed. DEQ]	N/A	

PROBLEMS: **Permittee must have available one of the "Methods of Analysis" as indicated above. (1) An initial demonstration of capability must be available for each Operator performing pH analysis. (16 - 17) Duplicate sample analysis is no longer required by DEQ for field instruments.**

VA DEQ Focused CEI Tech/Lab Inspection Report

ANALYST:	Joseph Joseph	VPDES NO	VA0028258

Meter: YSI 55

Parameter: Dissolved Oxygen
Method: Membrane Electrode
Facility Elevation ~ 20'
1/08

METHOD OF ANALYSIS:

	18th Edition of Standard Methods – 4500-O G
	21st or Online Editions of Standard Methods – 4500-O G (01)

	DO is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	**Y**	**N**
1)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation and is the sample bottle allowed to overflow several times its volume? [1.c]	**In-situ**	
2)	Are meter and electrode operable and providing consistent readings? [3]	**X**	
3)	Is membrane in good condition without trapped air bubbles? [3.b]	**X**	
4)	Is correct filling solution used in electrode? [Mfr.]	**X**	
5)	Are water droplets shaken off the membrane prior to calibration? [Mfr.]	**X**	
6)	Is meter calibrated before use or at least daily? [Mfr. & Part 1020]	**X**	
7)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	**X**	
8)	Is sample stirred during analysis? [Mfr.]	**In-situ**	
9)	Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	**X**	
10)	Is meter stabilized before reading D.O.? [Mfr.]	**X**	
11)	Is electrode stored according to manufacturer's instructions? [Mfr.]	**X**	
12)	Is a duplicate sample analyzed after every 20 samples if citing 18th or 19th Edition or daily if citing 20th or 21st Edition? [Part 1020] **NOTE**: Not required for *in situ* samples.	**N/A**	
13)	If a duplicate sample is analyzed, is the reported value for that sampling event the average concentration of the sample and the duplicate? [DEQ]	**N/A**	
14)	If a duplicate sample is analyzed, is the relative percent difference (RPD) ≤ 20? [18th ed. Table 1020 I; 21st ed. DEQ]	**N/A**	

PROBLEMS: Permittee must have available one of the "Methods of Analysis" as indicated above.

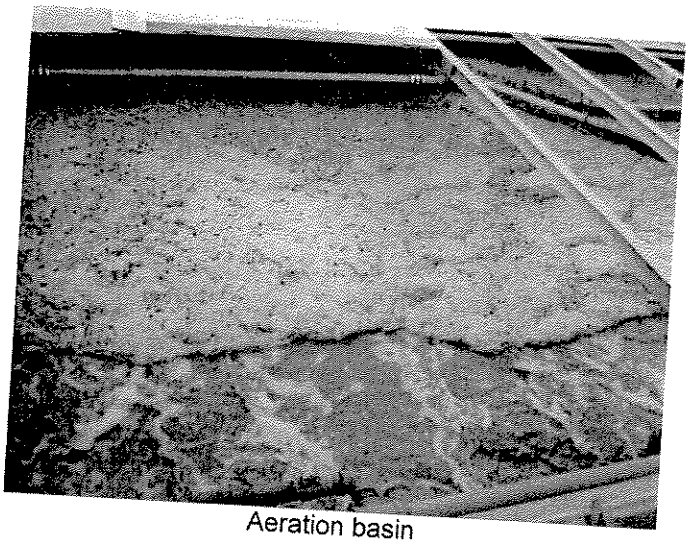
(12 – 14) Duplicate sample analysis is no longer required by DEQ for field instruments.

Instrument thermister must be verified annually against a NIST traceable thermometer.

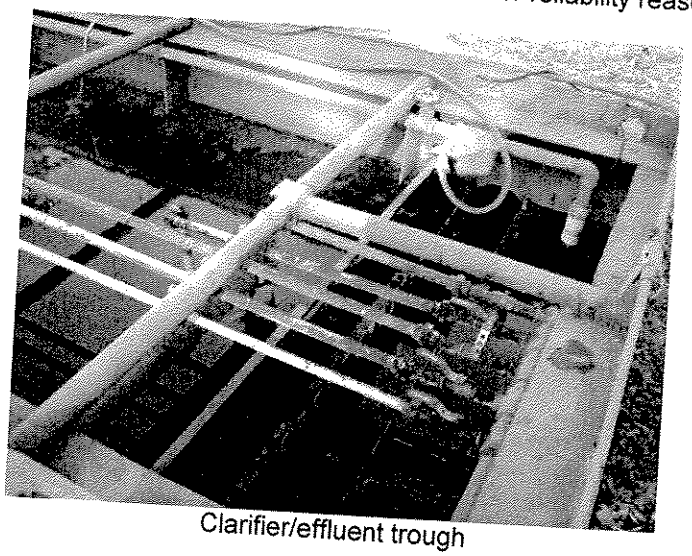
IDC procedure for DO Meter: Analyze four replicates of air-saturated water. The average recovery must be +/- 4% of the calculated oxygen saturation for a given elevation/barometric pressure and sample temperature (use a DO table to obtain calculated concentration). Prepare air-saturated water by filling a 2L beaker with about 1500mL of water. Allow the water to reach room temperature +/- 2 deg. C. Aerate the water with compressed air for at least 30 minutes. Allow the water to again reach room temperature and "rest" for 45-60 minutes. Gently fill four BOD bottles until overflowing and seal with a stopper. The samples must be analyzed within 4 hours of preparation.

INSPECTION PHOTOS – VA0028258

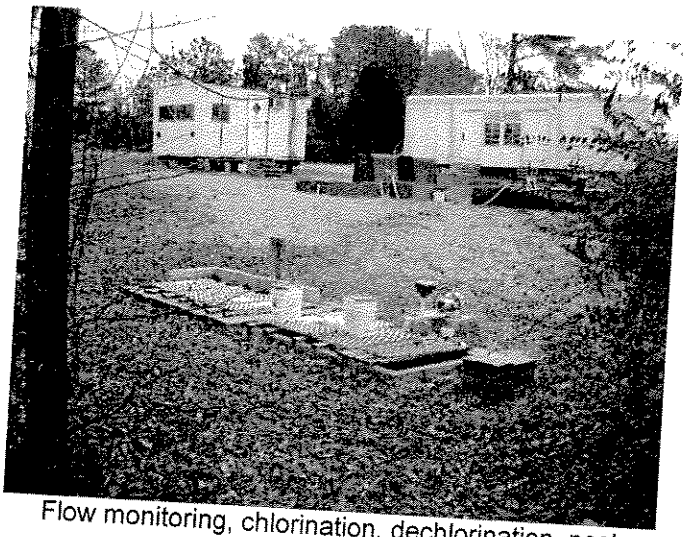
Comminutor removed from headworks for reliability reasons



Aeration basin



Clarifier/effluent trough



Flow monitoring, chlorination, dechlorination, post aeration zone is at center of photo

Discharge from plant is to an apparent wetland

Former wastewater treatment lagoon was closed (closure plan approved by DEQ 3/27/06) and has since been allowed to refill naturally with rain water

Attachment 5 –STORET Data

Bauer,Jaime

From: Palmore,Jennifer
Sent: Thursday, January 29, 2009 9:37 AM
To: Bauer,Jaime
Subject: Data for VA0028258
Attachments: 2-HRA00085.xls

Attached is the data analysis that you requested. The data was collected from monitoring station 2-HRA000.85, which is located on Harrison Creek at the Route 36 bridge. No data has been collected at Harrison Branch, however Harrison Creek is in the same watershed as Harrison Branch approximately 1.5 miles away from the discharge.. If you have any questions, don't hesitate to ask.

Thanks.

Jennifer V. Palmore, P.G.

Senior Environmental Engineer

Dept. of Environmental Quality

Piedmont Regional Office

4949-A Cox Road

Glen Allen, VA 23060

(804) 527-5058

(804) 527-5106 (fax)

						HARDNESS, TOTAL (MG/L AS CACO3)	
Sta Id	**Collection Date Time**	**Depth Desc**	**Depth**	**Container I**	**Comment**	**Value**	**Com Code**
2-HRA000.85	05/27/2004 14:30	S	0.3	R	NORMAL FLOW	38	
2-HRA000.85	07/15/2004 13:20	S	0.3	R	NORMAL FLOW	33.6	
2-HRA000.85	09/30/2004 14:00	S	0.3	R	NORMAL FLOW	40.1	
2-HRA000.85	11/30/2004 12:45	S	0.3	R	NORMAL FLOW	36	
2-HRA000.85	01/10/2005 13:20	S	0.3	S1	NORMAL FLOW	40	
2-HRA000.85	03/21/2005 14:45	S	0.3	R	NORMAL FLOW	40	
2-HRA000.85	05/25/2005 11:50	S	0.3	R	NORMAL FLOW	34	
2-HRA000.85	06/30/2005 11:45	S	0.3	R	NORMAL FLOW	28	
2-HRA000.85	09/07/2005 12:10	S	0.3	R	NORMAL FLOW	22	
2-HRA000.85	11/21/2005 11:55	S	0.3	R	NORMAL FLOW	22	
2-HRA000.85	01/18/2006 12:40	S	0.3	R	NORMAL FLOW - PH PROBE FAILED POST-CALIBRATION CHECK	23	
2-HRA000.85	03/07/2006 11:45	S	0.3	R	LOW FLOW	42	
2-HRA000.85	05/23/2006 12:15	S	0.3	R	LOW FLOW	39	
2-HRA000.85	07/18/2006 12:20	S	0.3	R	LOW FLOW	24	
2-HRA000.85	08/31/2006 11:35	S	0.3	R	NORMAL FLOW	23	
2-HRA000.85	11/02/2006 11:40	S	0.3	R	NORMAL FLOW	40	
Average						**33**	

Station ID	Collection Date	Depth Desc	Depth	Temp Celcius	Field Ph	Do Probe
2-HRA000.85	27-May-04	S	0.3	22.26	6.86	7.8
2-HRA000.85	15-Jul-04	S	0.3	22.45	6.43	6.83
2-HRA000.85	30-Sep-04	S	0.3	19.12	6.46	8.69
2-HRA000.85	30-Nov-04	S	0.3	10.76	6.74	10.9
2-HRA000.85	10-Jan-05	S	0.3	9.6	7	11.03
2-HRA000.85	21-Mar-05	S	0.3	12.86	6.59	9.72
2-HRA000.85	25-May-05	S	0.3	13.95	6.72	9.18
2-HRA000.85	30-Jun-05	S	0.3	21.09	6.56	7.01
2-HRA000.85	7-Sep-05	S	0.3	19.18	7.66	7.01
2-HRA000.85	21-Nov-05	S	0.3	12	7.8	10.08
2-HRA000.85	18-Jan-06	S	0.3	10.48		8.91
2-HRA000.85	7-Mar-06	S	0.3	7.2	7.2	
2-HRA000.85	23-May-06	S	0.3	14.1	6.8	7.5
2-HRA000.85	18-Jul-06	S	0.3	23.2	6.5	6.1
2-HRA000.85	31-Aug-06	S	0.3	22.7	6.7	7
2-HRA000.85	2-Nov-06	S	0.3	13.5	6.7	8.2
90th Percentile				**22.6**	**7.5**	
10th Percentile				**10.0**	**6.5**	

Attachment 6 – DMR Data

FLOW

	AVG	MAX
4/12/2004	0.023	0.043
5/6/2004	0.03	0.046
6/10/2004	0.02	0.043
7/12/2004	0.021	0.039
8/11/2004	0.021	0.044
9/10/2004	0.031	0.063
10/12/2004	0.038	0.357
11/10/2004	0.024	0.032
12/13/2004	0.024	0.033
1/11/2005	0.026	0.04
2/10/2005	0.018	0.04
3/11/2005	0.022	0.026
4/11/2005	0.023	0.034
5/11/2005	0.021	0.031
6/10/2005	0.019	0.05
7/8/2005	0.018	0.034
8/9/2005	0.024	0.055
9/12/2005	0.015	0.059
10/7/2005	0.026	0.051
11/10/2005	0.023	0.055
12/8/2005	0.022	0.032
1/11/2006	0.027	0.046
2/9/2006	0.029	0.064
3/9/2006	0.024	0.029
4/10/2006	0.021	0.033
5/10/2006	0.021	0.029
6/12/2006	0.019	0.035
7/11/2006	0.016	0.024
8/9/2006	0.019	0.036
9/8/2006	0.019	0.032
10/6/2006	0.026	0.054
11/9/2006	0.033	0.085
12/6/2006	0.033	0.054
1/4/2007	0.023	0.031
2/7/2007	0.025	0.036
3/12/2007	0.017	0.095
4/9/2007	0.02	0.032
5/10/2007	0.023	0.049
6/5/2007	0.019	0.028
7/11/2007	0.017	0.023
8/13/2007	0.018	0.027
9/10/2007	0.016	0.032
10/10/2007	0.016	0.028
11/13/2007	0.019	0.031
12/10/2007	0.022	0.027
1/11/2008	0.023	0.043
2/11/2008	0.025	0.033
3/6/2008	0.026	0.055
4/8/2008	0.025	0.045
5/7/2008	0.031	0.078
5/5/2008	0.025	0.058
7/7/2008	0.015	0.026
8/6/2008	0.02	0.046
9/9/2008	0.02	0.061
10/7/2008	0.019	0.04
11/10/2008	0.017	0.022
12/8/2008	0.018	0.032
1/9/2009	0.023	0.046

PH

	Conc Min	Conc Max
4/12/2004	6.59	8.42
5/6/2004	6.14	7.5
6/10/2004	6.14	7.39
7/12/2004	6.13	7.37
8/11/2004	6.02	7.35
9/10/2004	6.14	7.26
10/12/2004	6.14	6.96
11/10/2004	6.27	7.84
12/13/2004	6.09	6.97
1/11/2005	6.05	7.82
2/10/2005	6.12	7.24
3/11/2005	6.15	6.88
4/11/2005	6.19	7.82
5/11/2005	6.13	7.12
6/10/2005	6	7.63
7/8/2005	5.12	7.23
8/9/2005	4.01	7.36
9/12/2005	4.54	7.32
10/7/2005	3.6	6.8
11/10/2005	4.7	7.7
12/8/2005	6	7.7
1/11/2006	6.3	7.6
2/9/2006	7.2	8.3
3/9/2006	7.3	8.2
4/10/2006	6.6	8.1
5/10/2006	6.1	7.6
6/12/2006	6.1	7.5
7/11/2006	6.1	7.5
8/9/2006	6.2	7.7
9/8/2006	6	7.5
10/6/2006	6	7.6
11/9/2006	6.1	8
12/6/2006	6.1	7.6
1/4/2007	6.1	7.1
2/7/2007	6	6.9
3/12/2007	6.1	7
4/9/2007	6.1	7
5/10/2007	6	7
6/5/2007	6.1	7.6
7/11/2007	6.6	7.5
8/13/2007	6.4	7.8
9/10/2007	6.5	7.6
10/10/2007	6.6	7.6
11/13/2007	6.4	7.8
12/10/2007	6.2	7.1
1/11/2008	6.2	6.9
2/11/2008	6.1	6.8
3/6/2008	6.2	7.3
4/8/2008	6.2	7.1
5/7/2008	6.1	7.4
5/5/2008	6.2	7.1
7/7/2008	6.1	6.9
8/6/2008	6.2	7.1
9/9/2008	6.2	6.7
10/7/2008	6.1	6.9
11/10/2008	6.1	6.9
12/8/2008	6.2	7.1
1/9/2009	6.2	7.1
90th Percentile	-	7.826
10th Percentile	-	6.9

TSS

	Conc Avg	Conc Max
4/12/2004	17	17
5/6/2004	16	16
6/10/2004	18	18
7/12/2004	7	7
8/11/2004	6	6
9/10/2004	4	4
10/12/2004	4	4
11/10/2004	3	3
12/13/2004	18	18
1/11/2005	13	13
2/10/2005	7.6	7.6
3/11/2005	7.2	7.2
4/11/2005	9.6	9.6
5/11/2005	0	0
6/10/2005	20	20
7/8/2005	11.6	11.6
8/9/2005	14.8	14.8
9/12/2005	33.6	33.6
10/7/2005	59	59
11/10/2005	0.5	8
12/8/2005	29	29
1/11/2006	15	15
2/9/2006	16	16
3/9/2006	3	3
4/10/2006	16	16
5/10/2006	8	8
6/12/2006	6	6
7/11/2006	8	8
8/9/2006	6	6
9/8/2006	9	9
10/6/2006	3	3
11/9/2006	2	2
12/6/2006	2	2
1/4/2007	4	4
2/7/2007	6	6
3/12/2007	8	8
4/9/2007	15	15
5/10/2007	6	6
6/5/2007	11	11
7/11/2007	4	4
8/13/2007	4	4
9/10/2007	4	4
10/10/2007	3	3
11/13/2007	4	4
12/10/2007	3	3
1/11/2008	7	7
2/11/2008	4	4
3/6/2008	4	4
4/8/2008	3	3
5/7/2008	6	6
5/5/2008	8	8
7/7/2008	3	3
8/6/2008	6	6
9/9/2008	4	4
10/7/2008	17	17
11/10/2008	10	10
12/8/2008	13	13
1/9/2009	10	10

AMMONIA

	Conc Avg	Conc Max
4/12/2004	0.22	0.22
5/6/2004	0.36	0.36
6/10/2004	0.52	0.52
7/12/2004	1.13	1.13
8/11/2004	0.55	0.55
9/10/2004	0.8	0.8
10/12/2004	0	0
11/10/2004	0	0
12/13/2004	0.61	0.61
1/11/2005	0	0
2/10/2005	0	0
3/11/2005	0	0
4/11/2005	0	0
5/11/2005	0	0
6/10/2005	0.98	0.98
7/8/2005	3.27	3.27
8/9/2005	0.83	0.83
9/12/2005	0.23	0.23
10/7/2005	9.5	9.5
11/10/2005	11.5	11.5
12/8/2005	15.3	15.3
1/11/2006	17.7	17.7
2/9/2006	11.2	11.2
3/9/2006	19.1	19.1
4/10/2006	2.8	2.8
5/10/2006	0.3	0.3
6/12/2006	0.2	0.2
7/11/2006	0.3	0.3
8/9/2006	0.3	0.3
9/8/2006	0.2	0.2
10/6/2006	0.3	0.3
11/9/2006	0.1	0.1
12/6/2006	0	0
1/4/2007	0.2	0.2
2/7/2007	0.2	0.2
3/12/2007	0.9	0.9
4/9/2007	0.2	0.2
5/10/2007	0.2	0.2
6/5/2007	0.4	0.4
7/11/2007	0.1	0.1
8/13/2007	0.5	0.5
9/10/2007	1	1
10/10/2007	0	0
11/13/2007	0.4	0.4
12/10/2007	0.2	0.2
1/11/2008	0.2	0.2
2/11/2008	3.7	3.7
3/6/2008	0	0
4/8/2008	0.1	0.1
5/7/2008	0.2	0.2
5/5/2008	0.4	0.4
7/7/2008	0.3	0.3
8/6/2008	0.5	0.5
9/9/2008	0.4	0.4
10/7/2008	2.3	2.3
11/10/2008	0.6	0.6
12/8/2008	0.4	0.4
1/9/2009	0.3	0.3

TKN (N-KJEL)

	Conc Avg	Conc Max
4/12/2004	2.95	2.95
5/6/2004	3.6	3.6
6/10/2004	1.94	1.94
7/12/2004	4.8	4.8
8/11/2004	1.06	1.06
9/10/2004	1.3	1.3
10/12/2004	3.6	3.6
11/10/2004	4.75	4.75
12/13/2004	0	0
1/11/2005	2.62	2.62
2/10/2005	3.73	3.73
3/11/2005	1.16	1.16
4/11/2005	0.86	0.86
5/11/2005	5	5
6/10/2005	6.75	6.75
7/8/2005	5.88	5.88
8/9/2005	2.98	2.98
9/12/2005	2.84	2.84
10/7/2005	22	21.5
11/10/2005	15	15.1
12/8/2005	29	29.1
1/11/2006	23.5	23.5
2/9/2006	13.9	13.9
3/9/2006	21	21
4/10/2006	5	4.9
5/10/2006	3	2.9
6/12/2006	2	2.4
7/11/2006	3	2.9
8/9/2006	2	2.4
9/8/2006	2	2.1
10/6/2006	1	1.5
11/9/2006	1	1.4
12/6/2006	2	1.7
1/4/2007	1	1.4
2/7/2007	2	2.1
3/12/2007	2	2.5
4/9/2007	4	4.3
5/10/2007	3	2.6
6/5/2007	3	3.3
7/11/2007	1	1.2
8/13/2007	2	2.4
9/10/2007	3	3.2
10/10/2007	2	1.5
11/13/2007	4	4
12/10/2007	2	2.1
1/11/2008	0.2	2.9
2/11/2008	5	5.3
3/6/2008	2	1.7
4/8/2008	2	1.6
5/7/2008	3	2.9
5/5/2008	2	1.8
7/7/2008	3	2.9
8/6/2008	3	2.6
9/9/2008	2	2.1
10/7/2008	3	2.9
11/10/2008	3	3.1
12/8/2008	3	3.7
1/9/2009	4	3.8

CBOD5

	Conc Avg	Conc Max
4/12/2004	7.25	7.25
5/6/2004	8.9	16.8
6/10/2004	8.8	8.8
7/12/2004	4.6	4.6
8/11/2004	3.1	3.1
9/10/2004	0	0
10/12/2004	3.8	3.8
11/10/2004	2.5	2.5
12/13/2004	8.1	8.1
1/11/2005	0	0
2/10/2005	11.1	11.1
3/11/2005	0	0
4/11/2005	0	0
5/11/2005	0	0
6/10/2005	5.6	5.6
7/8/2005	0	0
8/9/2005	0	0
9/12/2005	6.1	6.1
10/7/2005	13	13
11/10/2005	8	8
12/8/2005	7	7
1/11/2006	6	6
2/9/2006	4	4
3/9/2006	0	0
4/10/2006	6	6
5/10/2006	6	6
6/12/2006	5	5
7/11/2006	6	6
8/9/2006	5	5
9/8/2006	3	3
10/6/2006	3	3
11/9/2006	0	0
12/6/2006	35	35
1/4/2007	0	0
2/7/2007	0	0
3/12/2007	6	6
4/9/2007	0	0
5/10/2007	9	9
6/5/2007	5	5
7/11/2007	3	3
8/13/2007	0	0
9/10/2007	0	0
10/10/2007	0	0
11/13/2007	3	3
12/10/2007	5	5
1/11/2008	3	3
2/11/2008	5	5
3/6/2008	4	4
4/8/2008	2	2
5/7/2008	4	4
5/5/2008	9	9
7/7/2008	4	4
8/6/2008	0	0
9/9/2008	5	5
10/7/2008	6	6
11/10/2008	4	4
12/8/2008	6	6
1/9/2009	10	10

DO

	Conc Min
4/12/2004	8.2
5/6/2004	8.1
6/10/2004	7.9
7/12/2004	6.99
8/11/2004	7
9/10/2004	5.65
10/12/2004	6.04
11/10/2004	6.27
12/13/2004	7.02
1/11/2005	7.1
2/10/2005	6.58
3/11/2005	7.29
4/11/2005	7.25
5/11/2005	6.59
6/10/2005	5.93
7/8/2005	5.03
8/9/2005	4.52
9/12/2005	4.97
10/7/2005	6.2
11/10/2005	6.5
12/8/2005	7.7
1/11/2006	9
2/9/2006	9.5
3/9/2006	7.8
4/10/2006	8
5/10/2006	6.2
6/12/2006	6
7/11/2006	5.4
8/9/2006	5.4
9/8/2006	5.3
10/6/2006	5.5
11/9/2006	5
12/6/2006	5.8
1/4/2007	6.2
2/7/2007	6.4
3/12/2007	7.7
4/9/2007	7.8
5/10/2007	6.2
6/5/2007	5.3
7/11/2007	6
8/13/2007	5.9
9/10/2007	6
10/10/2007	6.2
11/13/2007	6.2
12/10/2007	7
1/11/2008	7.4
2/11/2008	8.4
3/6/2008	8.5
4/8/2008	8
5/7/2008	6.1
5/5/2008	6
7/7/2008	6
8/6/2008	6.3
9/9/2008	6.1
10/7/2008	6
11/10/2008	6
12/8/2008	7.9
1/9/2009	8

CL2, TOTAL CONTACT

	Conc Min
4/12/2004	1.75
5/6/2004	1.48
6/10/2004	1.5
7/12/2004	1.02
8/11/2004	1.85
9/10/2004	1.86
10/12/2004	1.22
11/10/2004	1.03
12/13/2004	1.36
1/11/2005	1.10
2/10/2005	1.10
3/11/2005	1.24
4/11/2005	1.36
5/11/2005	1.32
6/10/2005	1.01
7/8/2005	1.12
8/9/2005	1.35
9/12/2005	1.01
10/7/2005	0.0
11/10/2005	0.1
12/8/2005	1.1
1/11/2006	1.2
2/9/2006	1.5
3/9/2006	1.1
4/10/2006	<2.2
5/10/2006	1.5
6/12/2006	1.7
7/11/2006	1.1
8/9/2006	2.1
9/8/2006	1.7
10/6/2006	0.3
11/9/2006	0.1
12/6/2006	1.9
1/4/2007	<2.2
2/7/2007	2.0
3/12/2007	<2.2
4/9/2007	<2.2
5/10/2007	2.1
6/5/2007	2.1
7/11/2007	1.5
8/13/2007	2.0
9/10/2007	1.8
10/10/2007	1.1
11/13/2007	1.8
12/10/2007	1.8
1/11/2008	1.8
2/11/2008	1.8
3/6/2008	1.1
4/8/2008	1.9
5/7/2008	1.6
5/5/2008	1.1
7/7/2008	1.3
8/6/2008	0.8
9/9/2008	0.9
10/7/2008	1.0
11/10/2008	1.0
12/8/2008	1.6
1/9/2009	1.5

CL2, INST TECH MIN LIMIT

	Conc Min
4/12/2004	1.75
5/6/2004	1.48
6/10/2004	1.5
7/12/2004	1.02
8/11/2004	1.85
9/10/2004	1.86
10/12/2004	1.22
11/10/2004	1.03
12/13/2004	1.36
1/11/2005	1.1
2/10/2005	1.1
3/11/2005	1.24
4/11/2005	1.36
5/11/2005	1.32
6/10/2005	1.01
7/8/2005	1.12
8/9/2005	1.35
9/12/2005	1.01
10/7/2005	0
11/10/2005	0.1
12/8/2005	1.1
1/11/2006	1.2
2/9/2006	1.5
3/9/2006	1.1
4/10/2006	<2.2
5/10/2006	1.5
6/12/2006	1.7
7/11/2006	1.1
8/9/2006	2.1
9/8/2006	1.7
10/6/2006	0.3
11/9/2006	0.1
12/6/2006	1.9
1/4/2007	<2.2
2/7/2007	2
3/12/2007	<2.2
4/9/2007	<2.2
5/10/2007	2.1
6/5/2007	2.1
7/11/2007	1.5
8/13/2007	2
9/10/2007	1.8
10/10/2007	1.1
11/13/2007	1.8
12/10/2007	1.8
1/11/2008	1.8
2/11/2008	1.8
3/6/2008	1.1
4/8/2008	1.9
5/7/2008	1.6
5/5/2008	1.1
7/7/2008	1.3
8/6/2008	0.8
9/9/2008	0.9
10/7/2008	1
11/10/2008	1
12/8/2008	1.6
1/9/2009	1.5

CL2, total

	Conc Avg	Conc Max
6/10/2004	0	0
7/12/2004	0	0
8/11/2004	0	0
9/10/2004	0	0
10/12/2004	0	0
11/10/2004	0	0
12/13/2004	0	0
1/11/2005	0	0
2/10/2005	0	0
3/11/2005	0	0
4/11/2005	0	0
5/11/2005	0	0
6/10/2005	0	0
7/8/2005	0	0
8/9/2005	0	0
9/12/2005	0	0
10/7/2005	<0.1	<0.1
11/10/2005	.099	.259
12/8/2005	0	0
1/11/2006	0	0
2/9/2006	0	0
3/9/2006	0	0
4/10/2006	0	0
5/10/2006	0	0
6/12/2006	0	0
7/11/2006	0	0
8/9/2006	0	0
9/8/2006	0	0
10/6/2006	0	0
11/9/2006	0	0
12/6/2006	0	0
1/4/2007	0	0
2/7/2007	0	0
3/12/2007	0	0
4/9/2007	0	0
5/10/2007	0	0
6/5/2007	0	0
7/11/2007	0	0
8/13/2007	0	0
9/10/2007	0	0
10/10/2007	0	0
11/13/2007	0	0
12/10/2007	0	0
1/11/2008	0	0
2/11/2008	0	0
3/6/2008	0	0
4/8/2008	0	0
5/7/2008	0	0
5/5/2008	0	0
7/7/2008	0	0
8/6/2008	0	0
9/9/2008	0	0
10/7/2008	0	0
11/10/2008	0	0
12/8/2008	0	0
1/9/2009	0	0

Attachment 7 – WLA Spreadsheet and Limitation Development

Mixing Zone Predictions for VA0028258 - Red Hill Mobile Home Park WWPT

Effluent Flow = 0.039 MGD
Stream 7Q10 = 0.003 MGD
Stream 30Q10 = 0.005 MGD
Stream 1Q10 = 0.001 MGD
Stream slope = 0.167 ft/ft
Stream width = 1 ft
Bottom scale = 1 ft.
Channel scale = 1

Stream slope, width, and bottom scale are based on model file summary showing a depth of 0.0167 ft and width of 1ft. See stream sanitation analysis dated August 28, 2000.

Mixing Zone Predictions @ 7Q10

Depth = .0448 ft
Length = 26.44 ft
Velocity = 1.4513 ft/sec
Residence Time = .0002 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .0461 ft
Length = 25.72 ft
Velocity = 1.4766 ft/sec
Residence Time = .0002 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .041 ft
Length = 29.6 ft
Velocity = 1.4248 ft/sec
Residence Time = .0058 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Virginia DEQ Mixing Zone Analysis Version 2.1

MSTRANTI DATA SOURCE REPORT

VA0028258 –Red Hill Mobile Home Park WWTP

Stream Information:	
Mean Hardness	STORET Data provided by planning staff for monitoring station 2-HRA000.85
90% Temperature	
90% Maximum pH	
10% Maximum pH	
Tier Designation	As advised by planning unit. See Flow Frequency Memo dated January 28, 2009 (Attachment 1).
Stream Flows:	
All Data	As advised by planning unit. See Flow Frequency Memo dated January 28, 2009 (Attachment 1).
Mixing Information:	
Flow Analysis	MIX.exe analysis based on Flow Frequency
Effluent Information:	
Mean Hardness	BPJ. Effluent data not available. Used conservative assumption.
90% Temperature	Summer Maximum Temperature as reported in Section A.12 Effluent Testing Information in the Permit Application Form 2A since data was temperature data availability was limited. Additionally, the maximum temperature of 28.4°C is close to best professions judgment assumptions of 28°C used when no effluent temperature data is available.
90% Maximum pH	DMR data from April 2004 to January 2009.
10% Maximum pH	
Discharge Flow	Design Flow as reported in Permit Application Form 2A.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Red Hill Mobile Home Park WWTP Permit No.: VA0028258

Receiving Stream: Harrison Branch Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	33	mg/L	1Q10 (Annual) =	0.001	MGD	Annual - 1Q10 Mix =	100	%	Mean Hardness (as CaCO3) =	25	mg/L
90% Temperature (Annual) =	22.6	deg C	7Q10 (Annual) =	0.003	MGD	- 7Q10 Mix =	100	%	90% Temp (Annual) =	28.4	deg C
90% Temperature (Wet season) =		deg C	30Q10 (Annual) =	0.005	MGD	- 30Q10 Mix =	100	%	90% Temp (Wet season) =		deg C
90% Maximum pH =	7.5	SU	1Q10 (Wet season) =	0.06	MGD	Wet Season - 1Q10 Mix =		%	90% Maximum pH =	7.826	SU
10% Maximum pH =	6.5	SU	30Q10 (Wet season)	0.119	MGD	- 30Q10 Mix =		%	10% Maximum pH =	6.9	SU
Tier Designation (1 or 2) =	1		30Q5 =	0.011	MGD				Discharge Flow =	0.039	MGD
Public Water Supply (PWS) Y/N? =	y		Harmonic Mean =	N/A	MGD						
Trout Present Y/N? =	N		Annual Average =	N/A	MGD						
Early Life Stages Present Y/N? =	Y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	1.2E+03	2.7E+03	--	--	1.5E+03	3.5E+03	--	--	--	--	--	--	--	--	--	--	**1.5E+03**	**3.5E+03**
Acrolein	0	--	--	3.2E+02	7.8E+02	--	--	4.1E+02	1.0E+03	--	--	--	--	--	--	--	--	--	--	**4.1E+02**	**1.0E+03**
Acrylonitrile [C]	0	--	--	5.9E-01	6.6E+00	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Aldrin [C]	0	3.0E+00	--	1.3E-03	1.4E-03	3.1E+00	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**3.1E+00**	--	**#VALUE!**	**#VALUE!**
Ammonia-N (mg/l) (Yearly)	0	1.18E+01	1.40E+00	--	--	1.2E+01	1.6E+00	--	--	--	--	--	--	--	--	--	--	**1.2E+01**	**1.6E+00**	--	--
Ammonia-N (mg/l) (High Flow)	0	1.16E+01	3.08E+00	--	--	1.2E+01	3.1E+00	--	--	--	--	--	--	--	--	--	--	**1.2E+01**	**3.1E+00**	--	--
Anthracene	0	--	--	9.6E+03	1.1E+05	--	--	1.2E+04	1.4E+05	--	--	--	--	--	--	--	--	--	--	**1.2E+04**	**1.4E+05**
Antimony	0	--	--	1.4E+01	4.3E+03	--	--	1.8E+01	5.5E+03	--	--	--	--	--	--	--	--	--	--	**1.8E+01**	**5.5E+03**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	3.5E+02	1.6E+02	1.3E+01	--	--	--	--	--	--	--	--	--	**3.5E+02**	**1.6E+02**	**1.3E+01**	--
Barium	0	--	--	2.0E+03	--	--	--	2.6E+03	--	--	--	--	--	--	--	--	--	--	--	**2.6E+03**	--
Benzene [C]	0	--	--	1.2E+01	7.1E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Benzidine [C]	0	--	--	1.2E-03	5.4E-03	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Benzo (a) anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Benzo (b) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Benzo (k) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Benzo (a) pyrene [C]	0	--	--	4.4E-02	4.9E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Bis2-Chloroethyl Ether	0	--	--	3.1E-01	1.4E+01	--	--	4.0E-01	1.8E+01	--	--	--	--	--	--	--	--	--	--	**4.0E-01**	**1.8E+01**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	1.7E+05	--	--	1.8E+03	2.2E+05	--	--	--	--	--	--	--	--	--	--	**1.8E+03**	**2.2E+05**
Bromoform [C]	0	--	--	4.4E+01	3.6E+03	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Butylbenzylphthalate	0	--	--	3.0E+03	5.2E+03	--	--	3.8E+03	6.7E+03	--	--	--	--	--	--	--	--	--	--	**3.8E+03**	**6.7E+03**
Cadmium	0	8.3E-01	3.9E-01	5.0E+00	--	8.5E-01	4.2E-01	6.4E+00	--	--	--	--	--	--	--	--	--	**8.5E-01**	**4.2E-01**	**6.4E+00**	--
Carbon Tetrachloride [C]	0	--	--	2.5E+00	4.4E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	**#VALUE!**	**#VALUE!**
Chlordane [C]	0	2.4E+00	4.3E-03	2.1E-02	2.2E-02	2.5E+00	4.6E-03	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**2.5E+00**	**4.6E-03**	**#VALUE!**	**#VALUE!**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	8.8E+05	2.5E+05	3.2E+05	--	--	--	--	--	--	--	--	--	**8.8E+05**	**2.5E+05**	**3.2E+05**	--
TRC	0	1.9E+01	1.1E+01	--	--	1.9E+01	1.2E+01	--	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.2E+01**	--	--
Chlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	8.7E+02	2.7E+04	--	--	--	--	--	--	--	--	--	--	**8.7E+02**	**2.7E+04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane [C]	0	--	--	4.1E+00	3.4E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Chloroform [C]	0	--	--	3.5E+02	2.9E+04	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
2-Chloronaphthalene	0	--	--	1.7E+03	4.3E+03	--	--	2.2E+03	5.5E+03	--	--	--	--	--	--	--	--	--	--	2.2E+03	5.5E+03
2-Chlorophenol	0	--	--	1.2E+02	4.0E+02	--	--	1.5E+02	5.1E+02	--	--	--	--	--	--	--	--	--	--	1.5E+02	5.1E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	8.5E-02	4.4E-02	--	--	--	--	--	--	--	--	--	--	8.5E-02	4.4E-02	--	--
Chromium III	0	1.8E+02	2.4E+01	--	--	1.9E+02	2.6E+01	--	--	--	--	--	--	--	--	--	--	1.9E+02	2.6E+01	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	1.6E+01	1.2E+01	--	--	--	--	--	--	--	--	--	--	1.6E+01	1.2E+01	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	1.3E+02	--	--	--	--	--	--	--	--	--	--	--	1.3E+02	--
Chrysene [C]	0	--	--	4.4E-02	4.9E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Copper	0	3.7E+00	2.8E+00	1.3E+03	--	3.8E+00	3.0E+00	1.7E+03	--	--	--	--	--	--	--	--	--	3.8E+00	3.0E+00	1.7E+03	--
Cyanide	0	2.2E+01	5.2E+00	7.0E+02	2.2E+05	2.3E+01	5.6E+00	9.0E+02	2.8E+05	--	--	--	--	--	--	--	--	2.3E+01	5.6E+00	9.0E+02	2.8E+05
DDD [C]	0	--	--	8.3E-03	8.4E-03	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
DDE [C]	0	--	--	5.9E-03	5.9E-03	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
DDT [C]	0	1.1E+00	1.0E-03	5.9E-03	5.9E-03	1.1E+00	1.1E-03	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	1.1E+00	1.1E-03	#VALUE!	#VALUE!
Demeton	0	--	1.0E-01	--	--	--	1.1E-01	--	--	--	--	--	--	--	--	--	--	--	1.1E-01	--	--
Dibenz(a,h)anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Dibutyl phthalate	0	--	--	2.7E+03	1.2E+04	--	--	3.5E+03	1.5E+04	--	--	--	--	--	--	--	--	--	--	3.5E+03	1.5E+04
Dichloromethane (Methylene Chloride) [C]	0	--	--	4.7E+01	1.6E+04	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
1,2-Dichlorobenzene	0	--	--	2.7E+03	1.7E+04	--	--	3.5E+03	2.2E+04	--	--	--	--	--	--	--	--	--	--	3.5E+03	2.2E+04
1,3-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	5.1E+02	3.3E+03	--	--	--	--	--	--	--	--	--	--	5.1E+02	3.3E+03
1,4-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	5.1E+02	3.3E+03	--	--	--	--	--	--	--	--	--	--	5.1E+02	3.3E+03
3,3-Dichlorobenzidine [C]	0	--	--	4.0E-01	7.7E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Dichlorobromomethane [C]	0	--	--	5.6E+00	4.6E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
1,2-Dichloroethane [C]	0	--	--	3.8E+00	9.9E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
1,1-Dichloroethylene	0	--	--	3.1E+02	1.7E+04	--	--	4.0E+02	2.2E+04	--	--	--	--	--	--	--	--	--	--	4.0E+02	2.2E+04
1,2-trans-dichloroethylene	0	--	--	7.0E+02	1.4E+05	--	--	9.0E+02	1.8E+05	--	--	--	--	--	--	--	--	--	--	9.0E+02	1.8E+05
2,4-Dichlorophenol	0	--	--	9.3E+01	7.9E+02	--	--	1.2E+02	1.0E+03	--	--	--	--	--	--	--	--	--	--	1.2E+02	1.0E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	1.3E+02	--	--	--	--	--	--	--	--	--	--	--	1.3E+02	--
1,2-Dichloropropane [C]	0	--	--	5.2E+00	3.9E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
1,3-Dichloropropene	0	--	--	1.0E+01	1.7E+03	--	--	1.3E+01	2.2E+03	--	--	--	--	--	--	--	--	--	--	1.3E+01	2.2E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	1.4E-03	1.4E-03	2.5E-01	6.0E-02	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	2.5E-01	6.0E-02	#VALUE!	#VALUE!
Diethyl Phthalate	0	--	--	2.3E+04	1.2E+05	--	--	2.9E+04	1.5E+05	--	--	--	--	--	--	--	--	--	--	2.9E+04	1.5E+05
Di-2-Ethylhexyl Phthalate [C]	0	--	--	1.8E+01	5.9E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
2,4-Dimethylphenol	0	--	--	5.4E+02	2.3E+03	--	--	6.9E+02	2.9E+03	--	--	--	--	--	--	--	--	--	--	6.9E+02	2.9E+03
Dimethyl Phthalate	0	--	--	3.1E+05	2.9E+06	--	--	4.0E+05	3.7E+06	--	--	--	--	--	--	--	--	--	--	4.0E+05	3.7E+06
Di-n-Butyl Phthalate	0	--	--	2.7E+03	1.2E+04	--	--	3.5E+03	1.5E+04	--	--	--	--	--	--	--	--	--	--	3.5E+03	1.5E+04
2,4 Dinitrophenol	0	--	--	7.0E+01	1.4E+04	--	--	9.0E+01	1.8E+04	--	--	--	--	--	--	--	--	--	--	9.0E+01	1.8E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	7.65E+02	--	--	1.7E+01	9.8E+02	--	--	--	--	--	--	--	--	--	--	1.7E+01	9.8E+02
2,4-Dinitrotoluene [C]	0	--	--	1.1E+00	9.1E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	1.2E-06	1.2E-06	--	--	1.2E-06	1.2E-06	--	--	--	--	--	--	--	--	--	--	1.2E-06	1.2E-06
1,2-Diphenylhydrazine [C]	0	--	--	4.0E-01	5.4E+00	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Alpha-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.3E-01	6.0E-02	1.4E+02	3.1E+02	--	--	--	--	--	--	--	--	2.3E-01	6.0E-02	1.4E+02	3.1E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.3E-01	6.0E-02	1.4E+02	3.1E+02	--	--	--	--	--	--	--	--	2.3E-01	6.0E-02	1.4E+02	3.1E+02
Endosulfan Sulfate	0	--	--	1.1E+02	2.4E+02	--	--	1.4E+02	3.1E+02	--	--	--	--	--	--	--	--	--	--	1.4E+02	3.1E+02
Endrin	0	8.6E-02	3.6E-02	7.6E-01	8.1E-01	8.8E-02	3.9E-02	9.7E-01	1.0E+00	--	--	--	--	--	--	--	--	8.8E-02	3.9E-02	9.7E-01	1.0E+00
Endrin Aldehyde	0	--	--	7.6E-01	8.1E-01	--	--	9.7E-01	1.0E+00	--	--	--	--	--	--	--	--	--	--	9.7E-01	1.0E+00

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	3.1E+03	2.9E+04	--	--	4.0E+03	3.7E+04	--	--	--	--	--	--	--	--	--	--	4.0E+03	3.7E+04
Fluoranthene	0	--	--	3.0E+02	3.7E+02	--	--	3.8E+02	4.7E+02	--	--	--	--	--	--	--	--	--	--	3.8E+02	4.7E+02
Fluorene	0	--	--	1.3E+03	1.4E+04	--	--	1.7E+03	1.8E+04	--	--	--	--	--	--	--	--	--	--	1.7E+03	1.8E+04
Foaming Agents	0	--	--	5.0E+02	--	--	--	6.4E+02	--	--	--	--	--	--	--	--	--	--	--	6.4E+02	--
Guthion	0	--	1.0E-02	--	--	--	1.1E-02	--	--	--	--	--	--	--	--	--	--	--	1.1E-02	--	--
Heptachlor [c]	0	5.2E-01	3.8E-03	2.1E-03	2.1E-03	5.3E-01	4.1E-03	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	5.3E-01	4.1E-03	#VALUE!	#VALUE!
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	1.0E-03	1.1E-03	5.3E-01	4.1E-03	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	5.3E-01	4.1E-03	#VALUE!	#VALUE!
Hexachlorobenzene[c]	0	--	--	7.5E-03	7.7E-03	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Hexachlorobutadiene[c]	0	--	--	4.4E+00	5.0E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	3.9E-02	1.3E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	1.4E-01	4.6E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	--	1.9E-01	6.3E-01	9.7E-01	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	9.7E-01	--	#VALUE!	#VALUE!
Hexachlorocyclopentadiene	0	--	--	2.4E+02	1.7E+04	--	--	3.1E+02	2.2E+04	--	--	--	--	--	--	--	--	--	--	3.1E+02	2.2E+04
Hexachloroethane[c]	0	--	--	1.9E+01	8.9E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	2.2E+00	--	--	--	--	--	--	--	--	--	--	--	2.2E+00	--	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	4.4E-02	4.9E-01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Iron	0	--	--	3.0E+02	--	--	--	3.8E+02	--	--	--	--	--	--	--	--	--	--	--	3.8E+02	--
Isophorone[c]	0	--	--	3.6E+02	2.6E+04	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	--	--
Lead	0	2.1E+01	2.4E+00	1.5E+01	--	2.1E+01	2.6E+00	1.9E+01	--	--	--	--	--	--	--	--	--	2.1E+01	2.6E+00	1.9E+01	--
Malathion	0	--	1.0E-01	--	--	--	1.1E-01	--	--	--	--	--	--	--	--	--	--	--	1.1E-01	--	--
Manganese	0	--	--	5.0E+01	--	--	--	6.4E+01	--	--	--	--	--	--	--	--	--	--	--	6.4E+01	--
Mercury	0	1.4E+00	7.7E-01	5.0E-02	5.1E-02	1.4E+00	8.3E-01	6.4E-02	6.5E-02	--	--	--	--	--	--	--	--	1.4E+00	8.3E-01	6.4E-02	6.5E-02
Methyl Bromide	0	--	--	4.8E+01	4.0E+03	--	--	6.2E+01	5.1E+03	--	--	--	--	--	--	--	--	--	--	6.2E+01	5.1E+03
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	3.2E-02	1.3E+02	--	--	--	--	--	--	--	--	--	--	3.2E-02	1.3E+02	--
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	--	--
Monochlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	8.7E+02	2.7E+04	--	--	--	--	--	--	--	--	--	--	8.7E+02	2.7E+04
Nickel	0	5.7E+01	6.4E+00	6.1E+02	4.6E+03	5.8E+01	6.9E+00	7.8E+02	5.9E+03	--	--	--	--	--	--	--	--	5.8E+01	6.9E+00	7.8E+02	5.9E+03
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	1.3E+04	--	--	--	--	--	--	--	--	--	--	--	1.3E+04	--
Nitrobenzene	0	--	--	1.7E+01	1.9E+03	--	--	2.2E+01	2.4E+03	--	--	--	--	--	--	--	--	--	--	2.2E+01	2.4E+03
N-Nitrosodimethylamine[c]	0	--	--	6.9E-03	8.1E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
N-Nitrosodiphenylamine[c]	0	--	--	5.0E+01	1.6E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
N-Nitrosodi-n-propylamine[c]	0	--	--	5.0E-02	1.4E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!
Parathion	0	6.5E-02	1.3E-02	--	--	6.7E-02	1.4E-02	--	--	--	--	--	--	--	--	--	--	6.7E-02	1.4E-02	--	--
PCB-1016	0	--	1.4E-02	--	--	--	1.5E-02	--	--	--	--	--	--	--	--	--	--	--	1.5E-02	--	--
PCB-1221	0	--	1.4E-02	--	--	--	1.5E-02	--	--	--	--	--	--	--	--	--	--	--	1.5E-02	--	--
PCB-1232	0	--	1.4E-02	--	--	--	1.5E-02	--	--	--	--	--	--	--	--	--	--	--	1.5E-02	--	--
PCB-1242	0	--	1.4E-02	--	--	--	1.5E-02	--	--	--	--	--	--	--	--	--	--	--	1.5E-02	--	--
PCB-1248	0	--	1.4E-02	--	--	--	1.5E-02	--	--	--	--	--	--	--	--	--	--	--	1.5E-02	--	--
PCB-1254	0	--	1.4E-02	--	--	--	1.5E-02	--	--	--	--	--	--	--	--	--	--	--	1.5E-02	--	--
PCB-1260	0	--	1.4E-02	--	--	--	1.5E-02	--	--	--	--	--	--	--	--	--	--	--	1.5E-02	--	--
PCB Total[c]	0	--	--	1.7E-03	1.7E-03	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	--	--	#VALUE!	#VALUE!

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Pentachlorophenol [C]	0	7.8E+00	5.8E+00	2.8E+00	8.2E+01	8.0E+00	6.2E+00	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**8.0E+00**	**6.2E+00**	**#VALUE!**	**#VALUE!**
Phenol	0	--	--	2.1E+04	4.6E+06	--	--	2.7E+04	5.9E+06	--	--	--	--	--	--	--	--	**--**	**--**	**2.7E+04**	**5.9E+06**
Pyrene	0	--	--	9.6E+02	1.1E+04	--	--	1.2E+03	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E+03**	**1.4E+04**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**--**	**--**	**--**	**--**
Gross Alpha Activity	0	--	--	1.5E+01	1.5E+01	--	--	1.9E+01	1.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.9E+01**	**1.9E+01**
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	5.1E+00	5.1E+00	--	--	--	--	--	--	--	--	**--**	**--**	**5.1E+00**	**5.1E+00**
Strontium-90	0	--	--	8.0E+00	8.0E+00	--	--	1.0E+01	1.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.0E+01**	**1.0E+01**
Tritium	0	--	--	2.0E+04	2.0E+04	--	--	2.6E+04	2.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**2.6E+04**	**2.6E+04**
Selenium	0	2.0E+01	5.0E+00	1.7E+02	1.1E+04	2.1E+01	5.4E+00	2.2E+02	1.4E+04	--	--	--	--	--	--	--	--	**2.1E+01**	**5.4E+00**	**2.2E+02**	**1.4E+04**
Silver	0	3.2E-01	--	--	--	3.3E-01	--	--	--	--	--	--	--	--	--	--	--	**3.3E-01**	**--**	**--**	**--**
Sulfate	0	--	--	2.5E+05	--	--	--	3.2E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**3.2E+05**	**--**
1,1,2,2-Tetrachloroethane [C]	0	--	--	1.7E+00	1.1E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**#VALUE!**	**#VALUE!**
Tetrachloroethylene [C]	0	--	--	8.0E+00	8.9E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**#VALUE!**	**#VALUE!**
Thallium	0	--	--	1.7E+00	6.3E+00	--	--	2.2E+00	8.1E+00	--	--	--	--	--	--	--	--	**--**	**--**	**2.2E+00**	**8.1E+00**
Toluene	0	--	--	6.8E+03	2.0E+05	--	--	8.7E+03	2.6E+05	--	--	--	--	--	--	--	--	**--**	**--**	**8.7E+03**	**2.6E+05**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	6.4E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**6.4E+05**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	7.3E-03	7.5E-03	7.5E-01	2.2E-04	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**7.5E-01**	**2.2E-04**	**#VALUE!**	**#VALUE!**
Tributyltin	0	4.6E-01	6.3E-02	--	--	4.7E-01	6.8E-02	--	--	--	--	--	--	--	--	--	--	**4.7E-01**	**6.8E-02**	**--**	**--**
1,2,4-Trichlorobenzene	0	--	--	2.6E+02	9.4E+02	--	--	3.3E+02	1.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**3.3E+02**	**1.2E+03**
1,1,2-Trichloroethane [C]	0	--	--	6.0E+00	4.2E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**#VALUE!**	**#VALUE!**
Trichloroethylene [C]	0	--	--	2.7E+01	8.1E+02	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**#VALUE!**	**#VALUE!**
2,4,6-Trichlorophenol [C]	0	--	--	2.1E+01	6.5E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**#VALUE!**	**#VALUE!**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	6.4E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**6.4E+01**	**--**
Vinyl Chloride [C]	0	--	--	2.3E-01	6.1E+01	--	--	#VALUE!	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**#VALUE!**	**#VALUE!**
Zinc	0	3.6E+01	3.7E+01	9.1E+03	6.9E+04	3.7E+01	4.0E+01	1.2E+04	8.8E+04	--	--	--	--	--	--	--	--	**3.7E+01**	**4.0E+01**	**1.2E+04**	**8.8E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	1.8E+01
Arsenic	1.3E+01
Barium	2.6E+03
Cadmium	2.5E-01
Chromium III	1.6E+01
Chromium VI	6.6E+00
Copper	1.5E+00
Iron	3.8E+02
Lead	1.5E+00
Manganese	6.4E+01
Mercury	6.4E-02
Nickel	4.1E+00
Selenium	3.2E+00
Silver	1.3E-01
Zinc	1.5E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

VA0028258 – Rd Hill Mobile Home Park WWTP
STATS.exe Analysis for TRC and Ammonia

Chemical = TRC
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.012
Q.L. = 0.1
# samples/mo. = 30
# samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.75508974086388E-02
Average Weekly limit = 1.07184595324212E-02
Average Monthly LImit = 8.69859620059178E-03

The data are:

20

Chemical = Ammonia
Chronic averaging period = 30
WLAa = 12
WLAc = 1.6
Q.L. = 0.2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 3.2282721494661
Average Weekly limit = 3.2282721494661
Average Monthly LImit = 3.2282721494661

The data are:

9.00

*all units are in mg/L

Attachment 8 – 2004 Permit Ammonia Limitation Documentation

Water Quality Standards and Wasteload Allocations

Permittee:	Red Hill MHP	Flows (MGD):	Design	0.039		90th % stream pH	6.56 Actual	MIX% for chronic WLA	100
Permit No.	VA0028258		7Q10	0.014	(chronic)	10th % stream pH		MIX% for acute WLA	100
Receiving Stream:	Harrison Branch		1Q10	0.012	(acute)	90th % stream temp	24.3 actual		
WQ Tier	1	(1 or 2)	30Q5	0.036	(human health - noncarcinogen)	mean effluent hardness			
Public Water Supply?	2	(1 = yes, 2 = no)	HM	0.078	(human health - carcinogen)	mean stream hardness	25	(note: 25 mg/l minimum)	

Parameter	Background	Water Quality Standard				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0			1.2E+03	2.7E+03			na	5.2E+03			1.2E+03	2.7E+03			na	5.2E+03			na	5.2E+03
Aldrin [C]	0	3.0E+00	3.0E-01	1.3E-03	1.4E-03	3.9E+00	4.1E-01	na	4.2E-03	3.0E+00	3.0E-01	1.3E-03	1.4E-03	3.9E+00	4.1E-01	na	4.2E-03	3.9E+00	4.1E-01	na	4.2E-03
Ammonia-N (mg/l)	0	2.3E+01	2.0E+00			3.0E+01	2.7E+00			2.3E+01	2.0E+00			3.0E+01	2.7E+00			3.0E+01	2.7E+00		
Anthracene	0			9.6E+03	1.1E+05			na	2.1E+05			9.6E+03	1.1E+05			na	2.1E+05			na	2.1E+05
Antimony	0			1.4E+01	4.3E+03			na	8.3E+03			1.4E+01	4.3E+03			na	8.3E+03			na	8.[illegible]
Arsenic	0			5.0E+01				na				5.0E+01				na				na	
Arsenic III	0	3.6E+02	1.9E+02			4.7E+02	2.6E+02			3.6E+02	1.9E+02			4.7E+02	2.6E+02			4.7E+02	2.6E+02		
Barium	0			2.0E+03				na				2.0E+03				na				na	
Benzene [C]	0			1.2E+01	7.1E+02			na	2.1E+03			1.2E+01	7.1E+02			na	2.1E+03			na	2.1E+03
Benzo(a)anthracene [C]	0			4.4E-02	4.9E-01			na	9.4E-01			4.4E-02	4.9E-01			na	1.5E+00			na	9.4E-01
Benzo(b)fluoranthene [C]	0			4.4E-02	4.9E-01			na	9.4E-01			4.4E-02	4.9E-01			na	1.5E+00			na	9.4E-01
Benzo(k)fluoranthene [C]	0			4.4E-02	4.9E-01			na	9.4E-01			4.4E-02	4.9E-01			na	1.5E+00			na	9.4E-01
Benzo(a)pyrene [C]	0			4.4E-02	4.9E-01			na	1.5E+00			4.4E-02	4.9E-01			na	1.5E+00			na	1.5E+00
Bromoform [C]	0			4.4E+01	3.6E+03			na	1.1E+04			4.4E+01	3.6E+03			na	1.1E+04			na	1.1E+04
Butylbenzylphthalate	0			3.0E+03	5.2E+03			na	1.0E+04			3.0E+03	5.2E+03			na	1.0E+04				1.0E+04
Cadmium	0	1.6E-01	1.3E-01			2.1E-01	1.8E-01			1.6E-01	1.3E-01			2.1E-01	1.8E-01			2.1E-01	1.8E-01		
Carbon Tetrachloride [C]	0			2.5E+00	4.5E+01			na	1.4E+02			2.5E+00	4.5E+01			na	1.4E+02			na	1.4E+02
Chlordane [C]	0	2.4E+00	4.3E-03	5.8E-03	5.9E-03	3.1E+00	5.8E-03	na	1.8E-02	2.4E+00	4.3E-03	5.8E-03	5.9E-03	3.1E+00	5.8E-03	na	1.8E-02	3.1E+00	5.8E-03	na	1.8E-02
Chloride	0	8.6E+05	2.3E+05	2.5E+05		1.1E+06	3.1E+05	na		8.6E+05	2.3E+05	2.5E+05		1.1E+06	3.1E+05	na		1.1E+06	3.1E+05	na	
TRC	0	1.9E+01	1.1E+01			2.5E+01	1.5E+01			1.9E+01	1.1E+01			2.5E+01	1.5E+01			2.5E+01	1.5E+01		
Chlorodibromomethane	0			6.9E+02	5.7E+04			na	1.1E+05			6.9E+02	5.7E+04			na	1.1E+05			na	1.1E+05
Chloroform [C]	0			5.7E+01	4.7E+03			na	1.4E+04			5.7E+01	4.7E+03			na	1.4E+04			na	1.[illegible]
2-Chlorophenol	0			1.2E+02	4.0E+02			na	7.7E+02			1.2E+02	4.0E+02			na	7.7E+02			na	7.[illegible]
Chlorpyrifos	0	8.3E-02	4.1E-02			1.1E-01	5.6E-02			8.3E-02	4.1E-02			1.1E-01	5.6E-02			1.1E-01	5.6E-02		
Chromium III	0	1.7E+02	2.2E+01			2.2E+02	3.0E+01			1.7E+02	2.2E+01			2.2E+02	3.0E+01			2.2E+02	3.0E+01		
Chromium VI	0	1.6E+01	1.1E+01			2.1E+01	1.5E+01			1.6E+01	1.1E+01			2.1E+01	1.5E+01			2.1E+01	1.5E+01		
Chrysene [C]	0			4.4E-02	4.9E-01			na	1.5E+00			4.4E-02	4.9E-01			na	1.5E+00			na	1.5E+00
Copper	0	1.2E+00	1.2E+00	1.3E+03		1.6E+00	1.6E+00	na		1.2E+00	1.2E+00	1.3E+03		1.6E+00	1.6E+00	na		1.6E+00	1.6E+00	na	
Cyanide	0	2.2E+01	5.2E+00	7.0E+02	2.2E+05	2.9E+01	7.1E+00	na	4.1E+05	2.2E+01	5.2E+00	7.0E+02	2.2E+05	2.9E+01	7.1E+00	na	4.1E+05	2.9E+01	7.1E+00	na	4.1E+05
DDD [C]	0			8.3E-03	8.4E-03			na	2.5E-02			8.3E-03	8.4E-03			na	2.5E-02			na	2.5E-02
DDE [C]	0			5.9E-03	5.9E-03			na	1.8E-02			5.9E-03	5.9E-03			na	1.8E-02			na	1.8E-02
DDT [C]	0	1.0E+00	1.0E-03	5.9E-03	5.9E-03	1.3E+00	1.4E-03	na	1.8E-02	1.0E+00	1.0E-03	5.9E-03	5.9E-03	1.3E+00	1.4E-03	na	1.8E-02	1.3E+00	1.4E-03	na	1.8E-02
Demeton	0		1.0E-01				1.4E-01				1.0E-01				1.4E-01				1.4E-01		

Parameter	Background	Water Quality Standard				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Dibenz(a,h)anthracene [C]	0			4.4E-02	4.9E-01			na	1.5E+00			4.4E-02	4.9E-01			na	1.5E+00			na	1.5E+00
Dibutylphthalate	0			2.7E+03	1.2E+04			na	2.3E+04			2.7E+03	1.2E+04			na	2.3E+04			na	2.3E+04
Dichloromethane [C]	0			4.7E+01	1.6E+04			na	4.8E+04			4.7E+01	1.6E+04			na	4.8E+04			na	4.8E+04
1,2-Dichlorobenzene	0			2.7E+03	1.7E+04			na	3.3E+04			2.7E+03	1.7E+04			na	3.3E+04			na	3.3E+04
1,3-Dichlorobenzene	0			4.0E+02	2.6E+03			na	5.0E+03			4.0E+02	2.6E+03			na	5.0E+03			na	5.0E+03
1,4-Dichlorobenzene	0			4.0E+02	2.6E+03			na	5.0E+03			4.0E+02	2.6E+03			na	5.0E+03			na	5.0E+03
Dichlorobromomethane [C]	0			5.6E+00	4.6E+02			na	1.4E+03			5.6E+00	4.6E+02			na	1.4E+03			na	1.4E+03
1,2-Dichloroethane [C]	0			3.8E+00	9.9E+02			na	3.0E+03			3.8E+00	9.9E+02			na	3.0E+03			na	3.0E+03
1,1-Dichloroethylene	0			3.1E+02	1.7E+04			na	3.3E+04			3.1E+02	1.7E+04			na	3.3E+04			na	3.3E+04
2,4-Dichlorophenol	0			9.3E+01	7.9E+02			na	1.5E+03			9.3E+01	7.9E+02			na	1.5E+03			na	1.5E+03
(2,4-Dichlorophenoxy) acetic acid (2,4-D)	0			7.1E+01				na				7.1E+01				na				na	
Dieldrin [C]	0	2.5E+00	1.9E-03	1.4E-03	1.4E-03	3.3E+00	2.6E-03	na	4.2E-03	2.5E+00	1.9E-03	1.4E-03	1.4E-03	3.3E+00	2.6E-03	na	4.2E-03	3.3E+00	2.6E-03	na	4.2E-03
Diethylphthalate	0			2.3E+04	1.2E+05			na	2.3E+05			2.3E+04	1.2E+05			na	2.3E+05			na	2.3E+05
Di-2-ethylhexylphthalate [C]	0			1.8E+01	5.9E+01			na	1.8E+02			1.8E+01	5.9E+01			na	1.8E+02			na	1.8E+02
2,4-Dimethylphenol	0			5.4E+02	2.3E+03			na	4.4E+03			5.4E+02	2.3E+03			na	4.4E+03			na	4.4E+03
2,4-Dinitrotoluene [C]	0			1.1E+00	9.1E+01			na	2.7E+02			1.1E+00	9.1E+01			na	2.7E+02			na	2.7E+02
Dioxin (ppq)	0			1.2E-06	1.2E-06			na	2.3E-06			1.2E-06	1.2E-06			na	2.3E-06			na	2.3E-06
Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.9E-01	7.6E-02	na	4.6E+02	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.9E-01	7.6E-02	na	4.6E+02	2.9E-01	7.6E-02	na	4.6E+02
Endrin	0	1.8E-01	2.3E-03	7.6E-01	8.1E-01	2.4E-01	3.1E-03	na	1.6E+00	1.8E-01	2.3E-03	7.6E-01	8.1E-01	2.4E-01	3.1E-03	na	1.6E+00	2.4E-01	3.1E-03	na	1.6E+00
Ethylbenzene	0			3.1E+03	2.9E+04			na	5.6E+04			3.1E+03	2.9E+04			na	5.6E+04			na	5.6E+04
Fluoranthene	0			3.0E+02	3.7E+02			na	7.1E+02			3.0E+02	3.7E+02			na	7.1E+02			na	7.1E+02
Fluorene	0			1.3E+03	1.4E+04			na	2.7E+04			1.3E+03	1.4E+04			na	2.7E+04			na	2.7E+04
Foaming Agents	0			5.0E+02				na				5.0E+02				na				na	
Guthion	0		1.0E-02				1.4E-02				1.0E-02				1.4E-02				1.4E-02		
Heptachlor [C]	0	5.2E-01	3.8E-03	2.1E-03	2.1E-03	6.8E-01	5.2E-03	na	6.3E-03	5.2E-01	3.8E-03	2.1E-03	2.1E-03	6.8E-01	5.2E-03	na	6.3E-03	6.8E-01	5.2E-03	na	6.3E-03
Hexachlorocyclohexane (Lindane)	0	2.0E+00	8.0E-02	7.0E+00	2.5E+01	2.6E+00	1.1E-01	na	4.8E+01	2.0E+00	8.0E-02	7.0E+00	2.5E+01	2.6E+00	1.1E-01	na	4.8E+01	2.6E+00	1.1E-01	na	4.8E+01
Hydrogen Sulfide	0		2.0E+00				2.7E+00				2.0E+00				2.7E+00				2.7E+00		
Indeno(1,2,3-cd)pyrene C	0			4.4E-02	4.9E-01			na	1.5E+00			4.4E-02	4.9E-01			na	1.5E+00			na	1.5E+00
Iron	0			3.0E+02				na				3.0E+02				na				na	
Isophorone	0			6.9E+03	4.9E+05			na	9.4E+05			6.9E+03	4.9E+05			na	9.4E+05			na	9.4E+05
Kepone	0		0.0E+00				0.0E+00				0.0E+00				0.0E+00				0.0E+00		
Lead	0	3.2E+00	4.2E-01	1.5E+01		4.2E+00	5.8E-01	na		3.2E+00	4.2E-01	1.5E+01		4.2E+00	5.8E-01	na		4.2E+00	5.8E-01	na	
Malathion	0		1.0E-01				1.4E-01				1.0E-01				1.4E-01				1.4E-01		
Manganese	0			5.0E+01				na				5.0E+01				na				na	
Mercury	0	2.4E+00	1.2E-02	5.2E-02	5.3E-02	3.1E+00	1.6E-02	na	1.0E-01	2.4E+00	1.2E-02	5.2E-02	5.3E-02	3.1E+00	1.6E-02	na	1.0E-01	3.1E+00	1.6E-02	na	1.0E-01
Methoxychlor	0		3.0E-02	4.0E+01			4.1E-02	na			3.0E-02	4.0E+01			4.1E-02	na			4.1E-02	na	
Mirex	0		0.0E+00				0.0E+00				0.0E+00				0.0E+00				0.0E+00		
Monochlorobenzene	0			6.8E+02	2.1E+04			na	4.0E+04			6.8E+02	2.1E+04			na	4.0E+04			na	4.0E+04

Parameter	Background	Water Quality Standard				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Nickel	0	1.7E+01	2.0E+00	6.1E+02	4.6E+03	2.2E+01	2.8E+00	na	8.8E+03	1.7E+01	2.0E+00	6.1E+02	4.6E+03	2.2E+01	2.8E+00	na	8.8E+03	2.2E+01	2.8E+00	na	8.8E+03
Nitrate (as N)	0			1.0E+04				na				1.0E+04				na				na	
Nitrobenzene	0			1.7E+01	1.9E+03			na	3.7E+03			1.7E+01	1.9E+03			na	3.7E+03			na	3.7E+03
Parathion	0	6.5E-02	1.3E-02			8.5E-02	1.8E-02			6.5E-02	1.3E-02			8.5E-02	1.8E-02			8.5E-02	1.8E-02		
PCB-1016 [C]	0		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.9E-02	na	1.4E-03
PCB-1221 [C]	0		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.9E-02	na	1.4E-03
PCB-1232 [C]	0		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.9E-02	na	1.4E-03
PCB-1242 [C]	0		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.9E-02	na	1.4E-03
PCB-1248 [C]	0		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.9E-02	na	1.4E-03
PCB-1254 [C]	0		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.9E-02	na	1.4E-03
PCB-1260 [C]	0		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.4E-02	4.4E-04	4.5E-04		1.9E-02	na	1.4E-03		1.9E-02	na	1.4E-03
Pentachlorophenol [C]	0	8.0E-03	5.0E-03	2.8E+00	8.2E+01	1.0E-02	6.9E-03	na	2.5E+02	8.0E-03	5.0E-03	2.8E+00	8.2E+01	1.0E-02	6.9E-03	na	2.5E+02	1.0E-02	6.9E-03	na	2.5E+02
Phenol	0			2.1E+04	4.6E+06			na	8.8E+06			2.1E+04	4.6E+06			na	8.8E+06			na	8.8E+06
Pyrene	0			9.6E+02	1.1E+04			na	2.1E+04			9.6E+02	1.1E+04			na	2.1E+04			na	2
Radionuclides (pCi/l except Beta/Photon)	0																				
Gross Alpha Activity	0			1.5E+01	1.5E+01			na	2.9E+01			1.5E+01	1.5E+01			na	2.9E+01			na	2.9E+01
Beta and Photon Activity	0			4.0E+00	4.0E+00			na	7.7E+00			4.0E+00	4.0E+00			na	7.7E+00			na	7.7E+00
Strontium-90	0			8.0E+00	8.0E+00			na	1.5E+01			8.0E+00	8.0E+00			na	1.5E+01			na	1.5E+01
Tritium	0			2.0E+04	2.0E+04			na	3.8E+04			2.0E+04	2.0E+04			na	3.8E+04			na	3.8E+04
Selenium	0	2.0E+01	5.0E+00	1.7E+02	1.1E+04	2.6E+01	6.8E+00	na	2.1E+04	2.0E+01	5.0E+00	1.7E+02	1.1E+04	2.6E+01	6.8E+00	na	2.1E+04	2.6E+01	6.8E+00	na	2.1E+04
Silver	0	3.1E-02				4.1E-02				3.1E-02				4.1E-02				4.1E-02			
Sulfate	0			2.5E+05				na				2.5E+05				na				na	
Tetrachloroethylene	0			3.2E+02	3.5E+03			na	6.7E+03			3.2E+02	3.5E+03			na	6.7E+03			na	6.7E+03
Toluene	0			6.8E+03	2.0E+05			na	3.8E+05			6.8E+03	2.0E+05			na	3.8E+05			na	3.8E+05
Total dissolved solids	0			5.0E+05				na				5.0E+05				na				na	
Toxaphene [C]	0	7.3E-01	2.0E-04	7.3E-03	7.3E-03	9.5E-01	2.7E-04	na	2.2E-02	7.3E-01	2.0E-04	7.3E-03	7.3E-03	9.5E-01	2.7E-04	na	2.2E-02	9.5E-01	2.7E-04	na	2.2E-02
1,2,4-Trichlorobenzene	0			2.6E+02	9.5E+02			na	1.8E+03			2.6E+02	9.5E+02			na	1.8E+03			na	1.8E+03
Trichloroethylene [C]	0			2.7E+01	8.1E+02			na	2.4E+03			2.7E+01	8.1E+02			na	2.4E+03			na	2.4E+03
2,4,6-Trichlorophenol [C]	0			2.1E+01	6.5E+01			na	2.0E+02			2.1E+01	6.5E+01			na	2.0E+02			na	2.0E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0			5.0E+01				na				5.0E+01				na				na	
Tributyltin	0	4.6E-01	2.6E-02			6.0E-01	3.5E-02			4.6E-01	2.6E-02			6.0E-01	3.5E-02			6.0E-01	3.5E-02		
Vinyl Chloride	0			2.0E+01	5.3E+03			na	1.0E+04			2.0E+01	5.3E+03			na	1.0E+04			na	1.0E+04
Zinc	0	1.1E+01	1.1E+01	5.0E+03		1.4E+01	1.4E+01	na		1.1E+01	1.1E+01	5.0E+03		1.4E+01	1.4E+01	na		1.4E+01	1.4E+01	na	

[C] = carcinogenic

Regular WLA = [WQS((%MIX/100)(stream flow) + design flow) - (streamflow)(background conc.)]/design flow

Antideg. Baseline = (0.25(WQS - background conc.) + bacground conc.) for acute and chronic

= (0.1(WQS - background conc.) + background conc.) for human health

Antideg. WLA = [Baseline(stream flow + design flow) - (stream flow)(background conc.)]/design flow

= data entry cells

= protected cells

Metal	Target Value (SSTV)
Antimony	8.3E+03
Arsenic	na
Arsenic III	1.5E+02
Barium	na
Cadmium	8.4E-02
Chromium III	1.8E+01
Chromium VI	8.4E+00
Copper	6.4E-01
Iron	na
Lead	3.5E-01
Manganese	na
Mercury	9.8E-03
Nickel	1.7E+00
Selenium	4.1E+00
Silver	1.6E-02
Zinc	5.5E+00

Note: do not use QL's lower than the minimum QL's provided in agency guidance

All possible acute and chronic criteria (in mg/l) have been calculated:
Program enters the applicable set of criteria in K149 and K155.

Acute Criteria: 23.1397

	unionized	total	NH3-N
When pH > 8.0:	0.3499237	178.3233	146.582
When pH < 8.0:	0.0552396	28.150467	23.1397

Chronic Criteria: 2.01689

When pH > 8.0:	0.0797547	40.643486	33.4089
When 7.7 < pH < 8.0:	0.0125902	6.4160609	5.274
When pH < 7.7:	0.0048148	2.4536336	2.01689

	Regular WLA	Antideg. WLA
Eff. 7Q10	0.014	0.014
Eff. 1Q10	0.012	0.012
Acute hardness	5.88235	5.8824
Chronic Hardness	6.60377	6.6038

Facility = Red Hill MHP
Chemical = Ammonia
STD averaging period = 30
NLAa = 23
NLAc = 2
Q.L. = .2
# per mo. = 1

Summary of Statistics

# observations =	26	
Expected Value =	11.6875	
Variance =	939.296	
C.V. =	2.622274	
97th percentile daily values =		62.1073
97th percentile 4 day average =		46.5093
97th percentile 30 day average=		22.2127
# < Q.L. =	0	
Model used =	lognormal	

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 5.59205445298276
Average Weekly limit = 5.59205445298276
Average Monthly Limit = 5.59205445298276

The data are:

0.69 9/98 DMRs
1.36
0.4
1.29
21.7
4.16
5.94
0.23
18.2
6.08
20
2.7
20
29.2
14.6
13.5
9.15
7.6
9.3
6.6
7.75
5.35
7.25
0.47
0.32
1.62 11/00